

# **University News**

- **Manpower Development in Electronics**
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- **Education and a New World Order**
- **Mass Programme for Functional Literacy**
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# CLASSIFIED ADVERTISEMENT

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(Council of Scientific & Industrial Research)

Advertisement No. 4/86

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# UNIVERSITY NEWS

## Manpower Development in Electronics

D.C. Surana\*

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Editor :  
**SUTINDER SINGH**

Electronics is a glamorous word these days in India. Amongst the 10+2 students there is a fierce race for seeking admission to Engineering Degree Courses and more particularly in Computers and Electronics Engineering branches. In the job market the employers nearly pursue these degree holders not only for the Electronics Engineering jobs but also for other managerial positions as they know that they are the cream of the country. Thus they become the most sought after amongst the graduate engineers. As a result most electronics engineering graduates have attractive employment opportunities in the country. However, a large number of them migrate to foreign lands for better opportunities, brighter career prospects and excellent working conditions.

The recent talk of preparing the country to enter the 21st century concomitant with the advances in emerging technologies such as Electronics and Computers have furthered the ambitions of young electronics professionals. The projection of manpower in the seventh plan further props up the hopes and aspirations of both in-service engineers and engineers to be.

The prospects of Diploma Engineers in Electronics and allied fields appear to be different. The experience is that, they do not find employment as easily as their graduate counter-parts. It has also been observed that there is a considerable time gap between getting a suitable employment and declaration of results. They remain under-employed for a considerably long time. How do the Industrial Training Institute (ITI) certificate holders in Electronics and related trades fare in the employment market is not clearly known. The employment opportunities with regard to the two categories viz., the diploma holders and ITI certificate holders depend greatly on the local and regional employment opportunities in public, private and Government sectors. It depends largely on the concentration of industries in a particular state or district as these people generally would not prefer to migrate in search of employment unlike the graduate engineers who are willing to move out in search of better grazing grounds. Whatever, may be the existing situation the requirement for electronics personnel is increasing day by day.

It appears that there would be a considerable growth of electronics and other industries in the next decade and accordingly a large scale spurt in the demand of manpower in this area. According to one estimate 7000 Postgraduates in Electronics alone will be required annually by 1990 not to speak of undergraduates and other categories. Obviously, there will be a correspondingly large requirement of graduates at lower levels. The question therefore is not only how to cope up with this demand in numbers but how to do so without sacrificing quality and without excessively burdening the scarce resources of the country. To be able to answer this challenging question which has been engaging the attention of the Ministry of Human Resource Development and the University Grants Commission (UGC), one has to take note of the existing situation. The Electronics education

\*Department of Electronics and Communication Engineering,  
University of Jodhpur, Jodhpur.

in most countries in the world is mainly confined to engineering institutes like Engineering faculties, Polytechnics and ITIs or vocational colleges. The educational programme is broadly divided into:

- (i) The Undergraduate level (Engineering)—B.E., B.Sc. (Engg), B. Tech., equivalent Diplomas and Professional Diplomas like the AMIE and the Grad. IETE.
- (ii) Postgraduate level (Engineering)—M.Sc., M. Tech.
- (iii) Postgraduate level (Science)—M.Sc. Physics with specialization in Electronics/Wireless/Solid State Electronics.
- (iv) Ph.D./Engineering and Physics (Electronics).

In addition, the polytechnics award Diplomas and Industrial Training Institutes award certificates for Technician level training.

During the past three years or more, the UGC has under its programme of restructuring and diversification of its academic programmes introduced Electronics/Computers as elective subjects at the B.Sc. (Science) level and Electronics Science at the M.Sc. (Science) level. The UGC has further introduced job-oriented post B.Sc. Diploma Courses in T.V. and Entertainment Electro-

tics, Instrumentation and Computers. If we look at this scenario, the levels in Electronics and allied education have proliferated. On one side we have professional engineering courses like ITI Diploma, B.E, M.E./M. Tech. level and P.G. Diplomas and on the other, we have the courses introduced in the Science faculties viz., B.Sc. (Electronics-Physics), M.Sc. (Physics-Electronics) and recently M.Sc. (Electronics). The electronics education as of today can be represented as follows (Fig. 1).

While at the level of technical education viz., the polytechnics and ITI, the scene appears to be quite clear but juxtaposing it with University Science stream posing the following questions :-

- (i) While both polytechnic Diploma and B.Sc. are a three years programme after 10+2 or 10+1 as the case may be, there is considerable dissimilarities between the two courses as in one case i.e. at B.Sc. level Electronics content is 1/3rd of the total course while in the other i.e. Diploma level it is more than 2/3rd of the course content and that too is of professional in nature. The important question, therefore, is regarding the equivalence between the two courses;
- (ii) The Diploma holders are not permitted to take competitive examinations like the Civil Service, Banking Service and other similar services

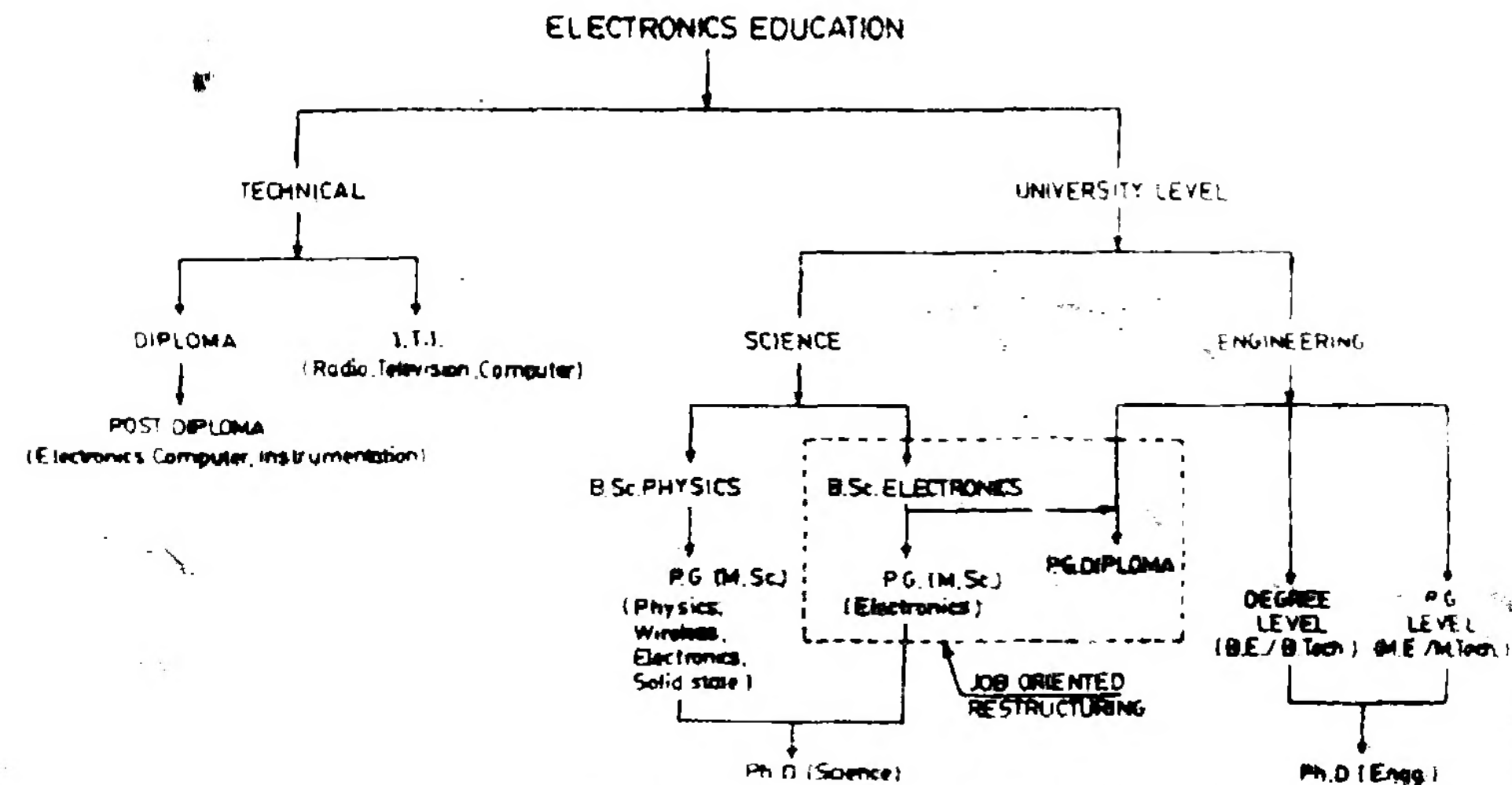


FIG. 1. U.G.C. MODEL FOR MANPOWER DEVELOPMENT IN ELECTRONICS



while the graduates in Science (Electronics) are entitled to this; and

- (iii) The effect of (ii) shall become counter-productive over a period of time. As the awareness builds up the brighter lot who could not be admitted to Engineering or Medical Degree would prefer to seek admission to Science (Electronics) stream and only a inferior quality of students would seek admission to Diploma stream in Electronics (unlike the present trend) and this trend may even go to such an extent that admissions to polytechnic may dwindle and ultimately there would be no admission seekers at all. Thus the resources committed in Electronics/Computers in Polytechnics and to some extent in ITIs shall remain under utilized while altogether newer facilities may have to be created in universities.

To remedy this situation, following alternatives are possible:

- (i) Discourage B.Sc. (Electronics) in universities,
- (ii) Diploma holders be permitted to appear in all competitive examinations for which B.Sc. students are eligible,
- (iii) Both (i) and (ii), and
- (iv) Encourage B.Sc. (Electronics) and also permit Diploma holders to appear for competitive examinations.

The first and third alternatives reduce the effort in creating additional manpower. However, this can be got over by increasing the intake capacity of Diploma holders with marginal increase in infrastructure. In addition, new and emerging subjects can be introduced as electives at the Diploma level. The fourth alternative may be good from the point of view of generating manpower providing equal opportunities to both B.Sc. and Diploma holders.

Coming now to the second stream, that is, University Education in Electronics it can be said that for the past few years engineering stream has been dominant and popular displacing the earlier M.Sc. (Physics-wireless/Radio-Physics) degree of the pre-sixty era. So popular did the professional B.E. (Electronics) courses become that some of the M.Sc. Courses in Radio-Physics for example at Allahabad and Calcutta preferred to be called B. Tech. degree with some remodelling. Nonthe-

less M.Sc. (Physics wireless/Electronics) courses continued in Universities but it generally did not attract the real talent as it did in the pre-sixty era except at few places. Gradually admissions to M.Sc. (Physics-Electronics) dropped to a very large extent in most universities. Worried by this trend, a National Workshop on Electronics Education was held at Indian National Science Academy (INSA) by the University of Delhi with the support of the UGC. A large number of physics teachers participated and a few from Electronics Engineering departments were also invited to the Workshop perhaps as speakers. The main conclusions of the workshop are summarised below:

- (i) Electronic Science is separate from Electronics Engineering;
- (ii) B.Sc. (Electronics) and M.Sc. (Electronics) be started in the universities and for this purpose separate Electronic Science Departments be established, if necessary; and
- (iii) Department of Electronics (DOE) and UGC should jointly provide funds for the purpose.

The UGC promptly set up a panel to go into these recommendations. On the basis of the recommendation of this panel, the UGC issued directives to the universities to forward proposals to set up Electronics Science Departments to cater to B.Sc./M.Sc. (Electronics Science) courses as per the funding pattern suggested by the panel. The Delhi, Poona and Jadavpur Universities were the first three to be selected for establishing a new Department of Electronics Science with financial inputs estimated to the tune of Rs. 65.00 Lakhs. The Delhi University was the first to receive the financial aid for M.Sc. Electronics courses. However, a few other Universities and Institutions were also the recipients of grant-in-aid to establish Department of Electronics Science to conduct even B.Sc. Electronics Science course.

Most universities/institutes/colleges which received this grant-in-aid from UGC, as far as I know, could start the B.Sc. (Electronics Science) courses but how many department of Electronics Science were created is not known. But if these were not created it is because of the disapproval of the internal academic bodies of these universities. UGC was all in favour of it, except at a later stage, when some electronics engineering professors questioned it.

Thus Electronics Science courses were started only during the past about five years in the universities with

or without separate Electronics Science Departments. This was in addition to the already existing M.Sc. (Radio Physics Electronics) courses. Thus in recent times unnatural division of Electronics into Electronics Science and Electronics Engineering is being sought in universities in India providing separate infrastructure in each case. As a consequence of which following issues/problems have arisen:

- (i) Is Electronics Science different from Electronics Engineering?
- (ii) Is B.Sc. (Electronics Science) course necessary for manpower development and should it be encouraged?
- (iii) If Science-electronics courses are necessary, is there a need to create a separate Department of Electronics Science in addition to the existing Departments of Electronics Engineering?
- (iv) Can the existing departments of Electronics Engineering not cater to the needs of Electronics Science courses?
- (v) Can the existing Electronics Diploma/Engineering programme not meet the requirement of increasing demand of manpower in Electronics?
- (vi) Should a separate Board of Studies in 'Electronics Science' be set up in Universities in addition to the existing Board of Studies in engineering (Electronics).

All these and many more such questions can be tackled straightaway by reaffirming that there is no difference between the disciplines of Electronics Science and Electronics Engineering. They are the same in concepts, contents and basis. Electronics now has large number of ramifications.

If one goes through the model curriculum proposed by the UGC Panel for B.Sc. and M.Sc. Electronics Science courses, it would become quite clear that existing Electronics Engineering Departments can quite easily meet their academic requirements. It would, therefore, be much more economical to use the existing facilities of the Electronics Engineering Departments to introduce even these so-called Science Courses than by creating separate Departments of Electronics Science. However, where such Electronics Engineering Departments do not exist, the UGC may be justified to set up a separate departments to meet the academic require-

ments by some other means. But this should be permitted only if it becomes essential for good reasons.

By merely increasing the intake capacity of the existing Electronics Engineering Departments, the countries' manpower needs can be easily met by marginal increase in inputs. But this does not mean that Electronics be not introduced at the B.Sc. level. Infact, UGC's efforts are laudable so far as restructuring and diversification of B.Sc. courses by introducing newer subjects like Instrumentation, Electronics, Computers and other newer technologies is concerned. What is really required is to avoid unnecessary duplication. It is relevant to point out that UGC is also encouraging job-oriented Post B.Sc. Diploma courses in Electronics and Computers in the universities preferably in Engineering Departments. The UGC model for electronics education is summarized in fig. 1.

The conclusions to be drawn from the above discussion are as follows:

- (i) The Postgraduate Diploma, Diploma and ITI courses be conducted by the Boards of Technical Education as is being done at present. However, a nexus should be built with university and higher education for mutual benefits;
- (ii) The Electronics and allied subjects be introduced in Science faculties in the universities on a selective basis, and for this purpose the facilities of existing Electronics Engineering Department and Computer Centres departments be utilized. Consequently the first phase selection criteria for introducing these courses would be to start these programmes wherever Electronics Engineering Departments or Computer Centres departments already exist;
- (iii) The intake capacity of Electronics Engineering Department be enhanced by providing additional funds for the purpose;
- (iv) Post B.Sc. job oriented Diploma courses in Electronics and allied subjects like computers be started in Electronics/Computer Engineering Departments;
- (v) M.Sc. (Radio Physics-Electronics) courses should be strengthened in selected universities;
- (vi) There is no need of creating separate Departments of Electronics Science in the universities,

unless the Electronics Engineering Departments do not exist;

(vii) Despite implementing all the above steps if the manpower needs of the country are not met, then the new Electronics Engineering Departments be created first of all in Engineering Colleges/Faculties followed by Electronics Departments in Science faculties on a selective basis; and

(viii) Wherever there are excellent Physics-Electronics Departments, 'Centres of Excellence' be set up to accelerate Research and Development activities in the areas in which they have created facilities, resources, infrastructure and strong Research Group.

The above schemes still leave out the following components of human resource development:

(i) Continuing Education for in-service and pre-service personnel;

(ii) Conversion and enrichment programmes;

(iii) Thrust in emerging areas;

(iv) Know-how development and transfer of technology; and

(v) Industry-University interaction and Industrial Consultancy.

There are two distinct alternatives available. One is to create an altogether new set up to take care of the left out components enumerated above. Another is to integrate all these components in the existing establishments by restructuring and reorganising them. The first alternative eliminates interaction and linkage between different kinds of institutions and needs greater capital outlays. The second alternative i.e. the integration and amalgamation of the two, is an excellent possibility to meet the objectives of human resource development but it has to be reorganised in a manner to improve linkages, interaction and environment. Some suggestions for such reorganisation are given below:

(i) Various existing departments like the Electronics, Computers, Communication and Instrumentation be regrouped and merged into a new faculty or centre to be called "Centre of New Technologies". Subjects like Remote Sensing, Medical Electronics, Electronics media, Micro-

processors, Information Technology, Reliability etc., may be added to this Centre. Such an integration of like disciplines and disciplines dependent on each other would not only establish excellent institutions for human resources development of all sorts-engineering or Science, in-service or pre-service personnel and others for hands on experience, but also most conducive for research and development activities. It shall provide close linkages and interaction between teaching, research and industry thereby fulfilling the objectives of higher education. Since the system utilizes the existing infrastructure it would also be most economical providing maximum utilization of resources;

(ii) One such Centre should be established in each



## UNIVERSITY NEWS

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State at the institution/university where sufficient infrastructure already exists;

- (iii) Each Centre should service the industries in the region by a bilateral arrangement; and
- (iv) The faculty in these Centres should consist of permanently employed teaching and research staff, adjunct from industry, visiting faculty from other institutions in the country and abroad, and invited researchers.

An integrated approach to setting up of "Centres of New Technologies" in every State would accelerate

the promotion of newer and emerging areas of technology. On one side, it would cater to both formal and non-formal systems of education in these fields and on the other, it would simultaneously provide a base for research and development activities and industrial consultancy. Integration of the disciplines with the existing infrastructure would entail lower capital outlays and ensure better utilization of resources. 'The Centre of New Technology' is perhaps the most appropriate concept to meet the additional manpower requirement in these disciplines not only in quantity but also in quality as well. The concept of "New Technology" model is depicted in Fig. 2. □

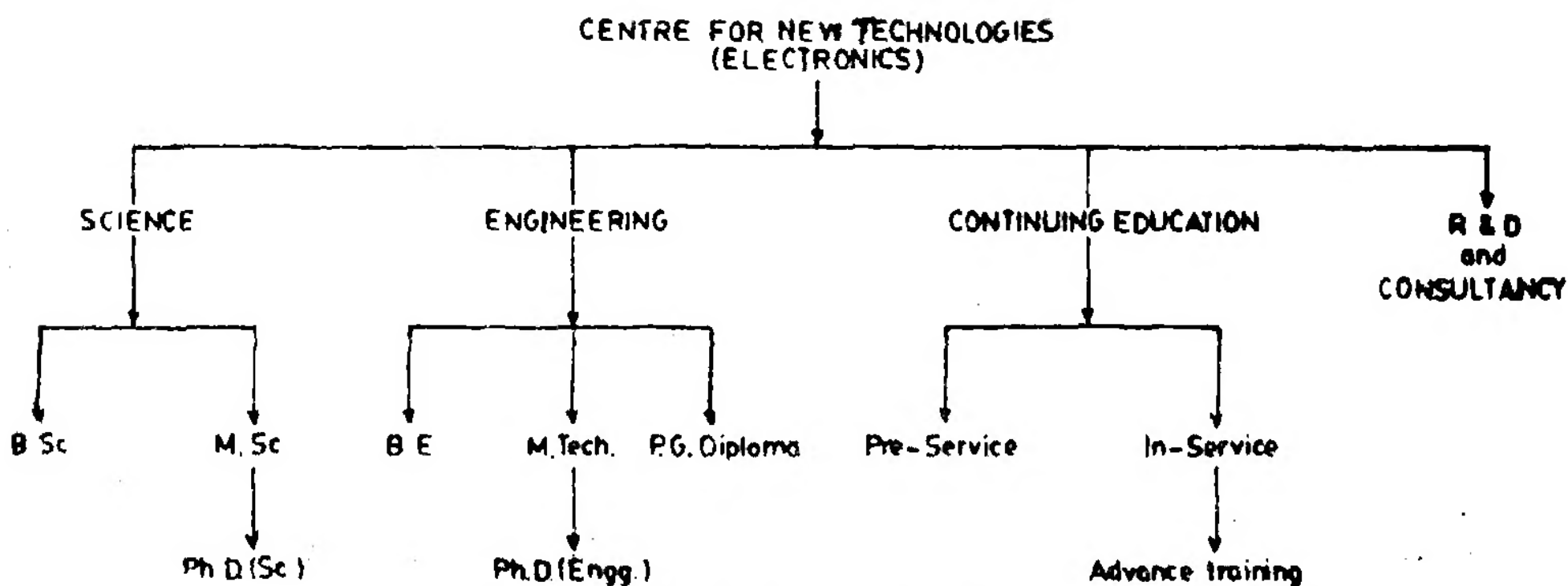


FIG. 2(a) : PROPOSED MODEL FOR MANPOWER DEVELOPMENT IN NEW TECHNOLOGIES

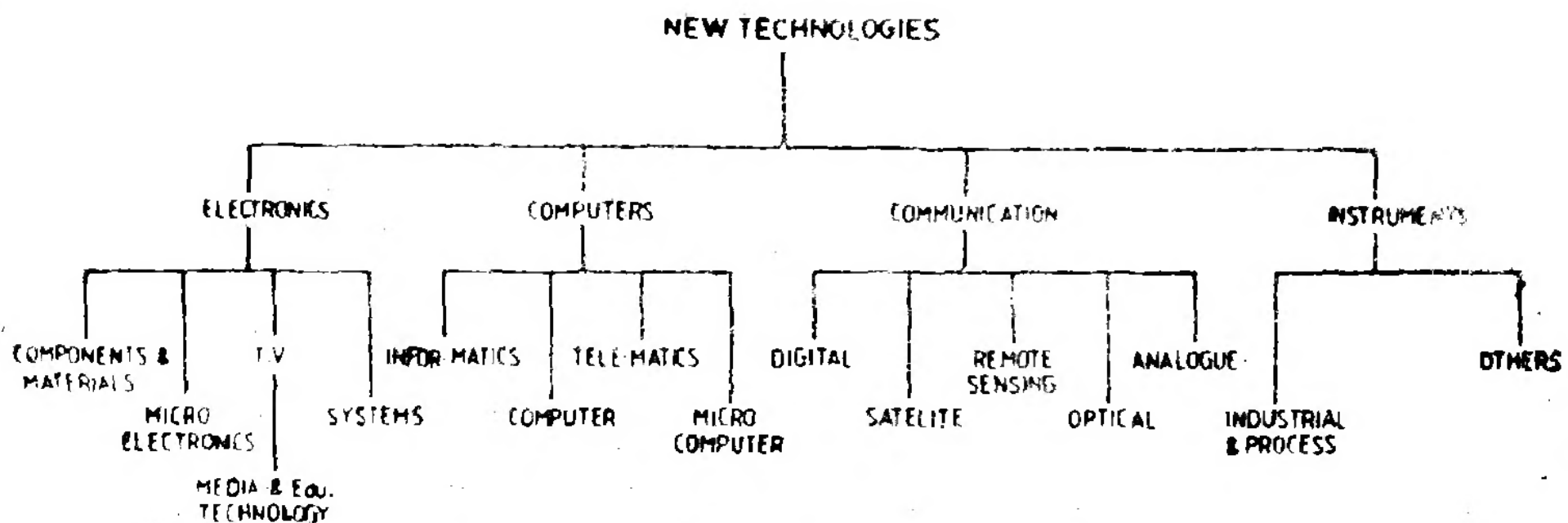


FIG. 2(b) : DISCIPLINES UNDER NEW TECHNOLOGIES



# Towards A Culture Of Peace

Sudhir Mattoo\*

Peace, today has come to be treated as a condition of enlightenment as much as of survival. Peace research has moved a long way from its preoccupation with problems of arms control, disarmament and inter-state relations. It has moved closer to a science of human fulfilment and is concerned as much with direct as with structural violence. Moral and aesthetic dimensions have come in. Problems of peace and war in relation to the problems of development have become its central concern. Such a reconceptualization has naturally led to rethinking of the entire concept of disarmament as critical to human survival as also to the survival of civilization itself.

Peace research has not grown in India. It is unfortunate because India was in a favourable position to build up an authentic programme and to enrich, thereby, the world peace research tradition. While social science has paid attention to international, social and personality structures, it has not looked at man—his need for self-individuation, personal growth and self-realization. This is the dimension which the Indian Philosophical tradition with its emphasis on a search for the Inner Man could have provided to build richer and more human concepts of peace.

Gandhi, the greatest peace activist and researcher, could have inspired analytical studies of the techniques and principles he used and their relevance across cultures. Also, India could have analysed its own experience in containing violence within its pluralist ethos. It could have derived many insights that might have provided guidance in respect of the predicament it finds itself in today.

India has a long tradition of supporting liberation movements and its policy of non-alignment has made significant contribution in containing both direct and structural violence. It has, however, not been able to give a more positive thrust towards building up new structures within the national and international systems. India can still play a leading role in developing new concepts and structures drawing upon its own tradition, its development experience as well as its interaction with the Third and the First world. Its insights into the problems of sub-national groups would be particularly meaningful.

Today the need for developing a peace research programme with a humanistic/ethical approach has become urgent. With our enormous manpower resources

and rich tradition we are in a position to develop a pluralistic conception of peace research with a diversified approach to its institutionalization. This has attained greater urgency because many of the problems thrown up by the paradoxes inherent in the process of Indian development have, during the recent past assumed alarming proportions. The heightening of ethnic antagonism, assertion of cultural identities, issues of inter-communal equity versus positive discrimination or those of productivity/efficiency versus social welfare and equitable distribution have, on the one hand rendered crises of law and order unmanageable and on the other hand, taken a heavy toll in terms of resources, human suffering and values. There is widespread anxiety about the prospect of peace, security and progress in the country, about our culture and its underlying unity, about growing alienation between the awakened masses and the centralised modes of conflict resolution and even about the break-down of the system itself.

The Institute of Peace Research and Action (IPRA), established in Delhi recently, has come into existence as a result of the persistent reflection of a group of individuals on the urgent need to grapple with these issues. The Group is convinced that a peace research and action programme has the potential to provide new knowledge and skills and a new perspective to deal with the inevitable tensions and movements unleashed by the development choices made as also with the forces and instruments of terror and destruction let loose by the vested interests. Also it has the potential to evolve concepts and strategies towards non-violent restructuring of the prevailing systems and relationships at the national, sub-national and the grass root levels.

Such an effort is relevant to the current developments elsewhere as well. The Indian situation is not unique. It is an integral dimension of the global changes taking place in the arrangement of human affairs—a movement characterised by restructuring of power relations, destabilisation of structures, struggle of the oppressed for rights and dignity—a struggle integral to the transformation of the total international society. The crises of the international system, the failure of the super powers to provide stability and the fear of increasing fragmentation, chaos and possible catastrophe—should obviously engage the attention of this research effort. The task is multi-dimensional. It is essentially global but simultaneously regional, national, sub-national and local. The threats to human survival and peace are brutalising at each of these levels.

\*Institute of Peace Research and Action, Delhi.

The concerns of IPRA will therefore, include problems of peace and war in relation to issues like the global economic crises, ethnic and social tensions within and between nations, system of social oppression, human rights and the struggle for democracy, social justice and cultural identities, conflicts over natural resources and ecological balance, and all this within the conception of a just social order. The present international system and working out of alternatives to it will also fall within its scope. While the Institute will study the nuclear arms race and its effects, arms control and reduction as well as the militarization process, it will also examine the nature and dynamics of non-violent struggles and strategies, their growth and effectiveness. Similarly while traditional strategic studies and studies in international relations and world politics will find a place in its work, peace movements round the world will receive special attention. So will education and pedagogic movements that promote and sustain peace. For, in assisting the healthy growth of individuals as also of cultures, education shapes the consciousness that structures the world we live in, apprehend and relate to, be it our institutions, technologies or our conceptions of reality.

Considering the above framework, the scope of the work of the Institute is vast. However, a modest beginning can be made within the following areas:

1. Comparative traditions/religious/cultures—their relevance to the present day problems.
2. Development for Peace in a Just World Order.
3. Peace Movements and their relationship to other gross root movements (ecology, women/human rights).
4. Peace Education.
5. Peace through Disarmament, Arms Control and International Law.

The five research programmes which should in due course of time develop into five independent Centres, will have close linkages. They will devote equal attention to philosophical theory, social reality and social action to effect changes in the social, political, economic and cultural situation. Drawing upon the insights that have emerged from the research effort in areas like strategic studies, international relations and world order modelling, the proposed programmes will have to adopt a more comprehensive approach to the study of peace, relate it to processes at work at global, regional, national, sub-national and gross root levels and locate it in a historical framework. Besides, methodologically such programmes will have to combine historical socio-psychological policy-oriented, ideological and action-oriented approaches.

While the scope of each of the programmes can be comprehensive, IPRA will make a modest beginning with some crucial inputs after determining carefully its priorities. The Institute proposes to organize a seminar

towards the end of the summer to prepare a blue-print of its research priorities. The seminar will, hopefully, help it to build up its research agenda—a framework of areas and issues it should concentrate on for the next ten to fifteen years. Such a framework could give it an identity of its own and in the process render it significantly relevant, nationally and internationally.

In the meanwhile, IPRA is also planning some research and action programmes of contemporary relevance. Two illustrations should suffice. The first one is a multicultural project to be undertaken in seven states to examine the impact of ethnic conflict on school children. The study is expected to throw up massive indigenous data to form a basis of appropriate peace education materials for the children of this country. Another project on the Contribution of the Bhagvad Gita to a Social Philosophy of Peace will compare the traditional interpretations of the Gita with those provided by modern Indian thinkers like Tilak, Aurobindo, Mahatma Gandhi and Vinoba Bhave to bring out continuity and unity between the two, and to examine if there is a peculiarly Indian moral vision within which the value of peace may occupy a place. The study will also present a comparative analysis of the moral psychology outlined in the Gita and in modern psychology, particularly the Jungian.

Mention may also be made of the action programme in which IPRA proposes to involve the educational institutions of various kinds throughout the country. The idea is to set up Peace Study Circles in these institutions to bring about an awareness of peace issues amongst the youth of the country, towards building up a Childrens Peace Movement. The Peace Study Circles will organize lectures, discussions, camps, debates, filmshows, plays, competitions and such other activities to promote such awareness. A beginning has been made with Higher Secondary Schools in the City of Delhi. The first Peace Club with a membership of 20 students was inaugurated recently at Bharatiya Vidya Bhavan, New Delhi.

The above format is ambitious, but crucial in view of the complexity and urgency of the problems the country is beset with. No effort, smaller or less adequate, can make a dent. In fact, IPRA has plans to develop an appropriate peace research programme in each region and eventually in each of the States. In this gigantic task IPRA would expect the assistance of the academic community and the universities in particular, because it is only there that the necessary expertise is available to guide and develop the research effort. The Institute is in touch with a number of universities. The scholars interested in the areas of its interest may also contact it. In a national task of this magnitude the academic community does owe a helping hand to this new born Institution to take the first step towards a long and tedious journey. □

# Education and a New World Order

Shri R. Parthasarathy, IAS, Vice-Chancellor, Gujarat Agricultural University, delivered the Convocation Address at South Gujarat University, Surat.

Excerpts from Shri Parthasarathy's address are reproduced below.

"...It is seldom realised that those who enter the portals of the University are amongst the fortunate few, a microscopic minority in the country. Despite substantial material achievements during the last 30 years, the country is ridden with mass poverty, un-employment and gross social and economic inequalities. Those boys and girls who have completed their education successfully have in reality, spent the best parts of their most formative years in the higher secondary and collegiate stages. However no sooner the graduates leave the precincts of the University they start realising the grim realities of a harsh world. In the mind of

The present system of University education is still in many ways a modified version of the Macaulay system of English education. A system originally designed to produce clerks educated in English, incidentally produced a number of lawyers, doctors, poets, freedom fighters, great thinkers, writers and journalists. Our university education even today is largely classical, theoretical, wooden and insensitive to the major live issues, at the state level, national level and international level. No doubt there has been an impressive increase in the products of higher education. The number of students rose from 2.5

## Convocation

every graduate a number of relevant questions arise. Is my education socially relevant? Is it ideal in its content in the background of our operating Culture? Does it provide me with the requisite knowledge and professional skill for securing right jobs in right places? Above all has it given me the right orientation in values of our culture? Is it consistent with our glorious cultural heritage reflected in the sublime concepts of Satya (truth), Dharma (righteousness) Shanti (peace), Prema (Love) and Ahimsa (Non-violence)? I shall try to answer some of these queries in the course of this convocation address.

million in 79-80 to 3.5 million in 84-85. Similarly the number of universities and deemed universities increased from 28 in 1950-51 to 135 in 1984. It is now widely admitted that there are different forces in operation within the higher education system leading to a visible deterioration in the quality and substance of education. There is therefore an urgent need for arresting further deterioration and to make it socially relevant, economically productive and culturally consistent with our historical and spiritual heritage.

An education which does not make the graduates realise the immense poverty around us is essen-

tially a failure. What then should be the objectives of a good University education? The primary objective should be the all-round balanced development of the mind, the body and spirit of every individual student. Education should infuse the necessary self help skills, leading to self reliance, subject skills, social and group skills and ethical skills. The system of education should be such as to inspire the total physical, mental, emotional, psychological, cultural and spiritual development in the personality of every student. This indeed is a tall order. Can this be achieved by every university?

Eminent educationists throughout the ages have always emphasised the promotion, achievement and maintenance of excellence in all branches of knowledge as the supreme goal. Education should infuse amongst the students a reverence for their parents, elders and teachers. *Matru Devo Bhava, Pitru Devo Bhava, Acharya Devo Bhava*, are ideals as old as upnishads. Discipline, character, truthfulness, loyalty, sense of self sacrifice, compassion for the poor and suffering, friendliness, co-operation, helpful nature, all these qualities have to be developed through education at the secondary and collegiate level.

Good education is dependent upon a good teacher, who is an inspirer and promoter of all noble qualities in each student. A good teacher is a friend, philosopher and guide.

Education should produce not only brilliant scholars, but also dutiful citizens who are always ready to plunge into the service of the nation. It should also cultivate a broad and enlightened outlook among citizens promoting international cooperation in social, economic and cultural fields.

Unfortunately while on the one hand education in the university



has shown visible signs of deterioration in quality, on the other it has equally demonstrated ugly form of commercialization. Examination oriented education has given rise to a flourishing market in private tuitions, cheap bazar notes and pamphlets, substituting for original textbooks. There is no incentive for reading original classic textbooks whose reading alone can raise the minds of the students to higher levels of thinking. A famous British Philosopher once observed "Reading maketh a full man; conference a ready man; and writing an exact-man." The habit of reading does not seem to have increased proportionately to the number of excellent books added to each university library. Similarly, it is reported that the reading of latest technical journals from different disciplines is not catching up as fast as it should. It appears that results are far more important than even the nature of examination and the manner of acquiring knowledge. In a fast developing acquisitive and permissive society we witness a rapid decline in moral values and work ethics. Nothing can be more disastrous and suicidal for the development of the nations than the emergence of a new order exhorting attainment of degree without examination, wages without work, results without efforts, achievement without talent.

The Greeks believed that promotion of a good life should be the goal of education. The term good life includes search for excellence in all spheres of life. In the Indian tradition, the aim of education has been to achieve discipline of the body, mind and spirit.

The teachings of Swami Vivekananda, Mahatma Gandhi and our Great Contemporary Satya Sai Baba emphasise rendering of service to the meanest, the lowliest, the last and the lost—the Daridra-narayan as the highest objective

of an ideal education system. Manav-seva aims at removal of poverty in the rural and urban areas and elimination of all forms of exploitation by vested interests. Satya, Prem, Shanti and Ahimsa were Gandhiji's main instruments for leading fearlessly a mass non-violent nationalist movement. He inspired in the same breath a political revolution, an economic revolution, a social revolution and a cultural revolution. The principles of civil disobedience movement evolved by Gandhiji are universally applicable to all human situations involving a struggle against economic imperialism, radical domination and discrimination, anti-nuclear warfare movement based on massive people's participation. Gandhiji and Gandhian principles are becoming more and more relevant with humanity getting into the grips of a severe cold war between two power blocks. Nearly a thousand million dollars are spent a day on war preparations. The remaining part of my lecture will be devoted to the problems arising out of growing inequalities at the national and international levels, the growing irrelevance of different forms of political and social systems and the need for a new world order based on moral and spiritual values.

Between the industrialized countries and the developing world the imbalance is complete, the asymmetry abnormal and the discrepancies fearful. One third of mankind representing the most deprived developing countries, receives only 3 per cent of the total world income.

According to Lazar Majsov, the population of the developing countries which represents over three quarters of all mankind, receives only 6.5 percent of world income. The per capita income is eighteen times lower than that enjoyed in the developed states as a whole. The third world possesses 89 per cent of existing raw materials

but its share of overall industrial production is under 7 per cent.

In 1975, the national income in Sweden was over \$ 8,000 per head, in other European countries, it ranged from \$ 3000 to \$ 6000. At that time, national income per head in the twenty five least developed countries reached only \$ 45 to \$ 90 per year. With its 10 million inhabitants, Sweden produces and consumes more electricity than India, with a population of 670 million. To attain a level of production and consumption equal to that of Sweden, the Government at New Delhi would have to construct 10,000 nuclear power stations with a capacity of 500 megawatts each.

Whereas the majority of mankind lives in a state of endemic famine, the population of the United States, representing only 6 per cent of the world population consumes 55 per cent of all the natural resources of the earth. The total number of air-conditioning plants operating in the United States use more electricity than the whole of the People's Republic of China with its 850 million inhabitants.

It has further been calculated that an American child consumes roughly 500 times more material resources than a child in an under-developed country. "Inequality" in the face of hunger is one of the most intolerable forms of inequality besetting mankind. The United Nations' Food and Agriculture Organization (FAO) has calculated that fifteen people out of a hundred are over-nourished while one person in ten dies of hunger. The World Food Conference held in Rome in November, 1974 demonstrated that one person in six now suffers from malnutrition; but that five out of six will do so in the year 2000 if nothing is done meanwhile to remedy this tragic situation. And while in certain geographical areas things are moving towards a state of absolute poverty, we find by



the same token that the grain of wheat, like nuclear radiation is becoming a strategic product of prime importance for those who know how to use it. Absolute poverty leads to the discovery of the ultimate weapon.

The studies by the President of the World Bank, Robert S. McNamara, of the growth of absolute poverty in the Third World and the deterioration of agriculture and the pauperization of the towns, introduce us to a Dante-like universe.

In the third world, 50 million human beings are packed together in shanty towns, 500 million are permanently unemployed, 550 million are illiterate, 700 million suffer from serious under nourishment, and 1 billion and 200 million have no drinking water or sanitation. Furthermore, it is calculated that 900 million people enjoy an income of 30 cents a day. If it takes you six hours to read the book of Susan George written recently, somewhere in the world 2500 people would have in the meantime died of starvation or of hunger-related illness.

Above all it has finally been realized that the present system of world economic relations and the international political order, cannot be reformed by the working of some internal logic, or by some dialogues between North and South, between the haves and havenots. There are, in fact, more starving, undernourished or illiterate people now than in 1945 when, in San Francisco, the peoples of the United Nations reaffirmed their faith in fundamental human rights and determined to promote social progress and better standards of life in larger freedom. In some countries 60 per cent of the children die before the age of five.

Between 1950 and the present day the number of illiterates has risen from 100 to 800 million. The third world crushed by a colossal debt of \$ 200 billion, is on the brink of bankruptcy. In the words of McNamara,

poverty in the developing world is an intolerable assault on human dignity and decency. Clearly such a situation must sooner or later, call for a change in the fundamental equations of economic power in the world.

North America and Australia which are now the world's gigantic granaries have reserve food stocks, which substantial as they are, will nevertheless become more and more inadequate. At the beginning of the 1960 grain stocks in the United States plus the potential output represented by the land left fallow were sufficient for 100 days' consumption for the world as a whole. These stocks have now diminished notwithstanding the disappearance of the fallow land owing to the world food crisis, to such a point that the United States' reserves for the world now correspond to only thirty days' consumption.

Thus in Developed Countries food production is related to monetary market demand—not to the needs of human beings. As Susan George points out, worse still the Third World man is deprived of good not only for the benefit of a man belonging to a prosperous country but also for the benefit of that man's animal. Even consumption by animals in the prosperous States takes precedence over human consumption in the underdeveloped countries. Animals in the "Advanced" States eat one quarter of the world output of grain—the equivalent of human consumption in China and India combined representing some 1 billion 300 million people.

Production of dog foods in the United States represented in 1967 about the equivalent of the average income per man in India for each dog in America. In France, the calorie consumption of the 8 million dogs and 7 million cats is equivalent to that of the whole population of Portugal. The amount

of food wasted by the Americans in one year and thrown into their dustbins would be sufficient to feed all the countries of the immense African Continent for a month. Domestic animals now possess what many people do not—hairdressers, tailors, and specialized restaurants. These show the greatest injustice done to man and utter disregard for human lives.

As early as 1968, Pandit Nehru observed that the essential cleavage in the world of today lies not so much between Communist and anti-communist states as between the nations enjoying a highly developed industrial economy and the underdeveloped nations struggling to survive.

The United States represents six per cent of the world population, and by virtue of the wealth of minerals, energy and food products in their soil and sub-soil ranks among the major producers of raw materials and basic commodities. Yet it imports 33 per cent of the iron, 86 per cent of the bauxite, 88 per cent of the nickel, 92.2 per cent of the manganese and 100 per cent of the chromium mined in the world as a whole. Western Europe, less rich than the United States in raw materials, and Japan (Industrial and industrious) also buy a further proportion of the world production.

A representative of the United Republic of Tanzania stated that in 1963, it had to produce five tons of sisal to buy a tractor, in 1970 ten tons were needed. Similarly, rubber exporting country could buy six tractors for twenty five tons of rubber in 1960, today it can only get two for the same quantity. A Sahelian country has to produce three times as much cotton as in 1960 to import the same car at the present time.

Raw material prices have fallen by comparison with the price of imports from the affluent countries, which show a relative rise. For instance at the beginning of the

sixties, Tanzania had to sell 7½ kilos of coffee to cover the purchase of a Swiss watch. In 1974, the amount had risen to 14.2 kilos of coffee. The deterioration is thus shown by a relative fall in the purchasing power of the Third World countries apparent as a transfer of the surplus value to the prosperous countries. To avoid any misunderstanding, and to permit an accurate reliable comparison, the above figures refer to cases where the export sector of the Third World country is at a comparable level of modernization and sophistication with the developed countries, and where the productivity rate is at least as high as that of a worker in the Western World. Thus, with the same rate of productivity, the time needed to make a Swiss watch is three hours; but the time needed to produce 14.2 kilos of coffee is twenty one hours. There is thus a transfer of surplus value expressed in man hours, the product of one hour work is exchanged for the product of seven-hour's work.

This is the familiar phenomenon of deterioration of the terms of trade, whereby the mechanism of the world economy, hitherto not planned for the benefit of the Third World, but loaded against it, can be dismantled. The Third World country is obliged to deliver a constantly growing quantity of the energy or raw materials it produces to obtain the same product from the industrialized countries. Furthermore, that product is manufactured with its own raw materials, its own energy, and sometimes with its own immigrant manpower and 'grey matter', that of its technicians trained in the prosperous countries and remaining there (the countries benefitting from the 'Brain Drain'). This is the new form of slavery of modern times, whereby the Third World has to work harder all the time to buy the same tractor or watch from the advanced States. This

means, when all is said and done, that the Third World pays for the rest and leisure of the inhabitants of the developed world with the additional labour it puts in. The multinational firms play some part in this situation.

The multinational companies are the 'chartered companies' of modern times. The latter were the prime instruments of colonization in the sixteenth and seventeenth centuries, and in fact up to the nineteenth century. They were granted by the colonizing State certain sovereign powers, such as the right to recruit armed forces, levy taxes, and make regulations. Under their charter, these private companies thus enjoyed some of the privileges of a colonizing State in a dependent territory.

The present situation, with the multinational companies, is even more alienating for the underdeveloped countries than it was in the colonization period with the chartered companies. The private macro-power over-rides the state macro-power. As they hold the real ascendancy, the multinational firms show a definite propensity to run the national affairs of the younger states which have to be content with a semblance of power proportionate to their financial dependence on these private groups. As Duroselle points out, "if the trading figures of these companies are compared with the State budget, the colossal scale of the former as against the modesty of the latter is amazing. These private companies keep tight hand on the 'independent' sovereign State by methods that are as varied as they are effective, enabling them to control and recast its general policy at will." The Faustian power of the multinational companies can now stand comparison with that of some industrialized States.

Of the hundred biggest world-wide economic entities (leaving

out of account their legal status), fiftyone are business enterprises (assessed by trading figures) and forty-nine are States (assessed by gross national product (GNP)). The biggest company—General Motors—takes thirteenth place, between Mexico and Sweden. This firm with over 75,000 employees, has a labour force larger than the population of Luxembourg. Ford's turnover is larger than Denmark's GNP; that of IBM or Chrysler equals the GNP of the Republic of Korea or the Philippines. The liquid assets of Standard Oil (Esso) are worth more than the United States gold reserves; it has a larger fleet of tankers than Greece. Many more examples could be given. There are no signs of halt to this trend, on the contrary, it seems to be gathering momentum. Some forecasts indicate that 300 multinational firms will control 70 per cent of industrial production in the non-socialist countries by 1986.

Most of these firms have their head offices in market economy capitalist countries, especially in the United States, which is the home of more than two-thirds of the total number, including the biggest. In this connection it may be noted in passing that the foreign subsidiaries of American multinational firms already constitute the third greatest economic power in the world.

A study carried out by the Vienna Institute on the problems of economic development shows that the influence of the multinational firms has increased considerably more. They are in a position to plan and direct world economic development, to the point where some economists have no doubt that they could make Ricardo's dream of a perfectly rational and coherent division of labour come true. They organize production and distribution all over the world making the maximum profits. This pursuit of the greatest possible profit induces

them to operate to the detriment of the developing countries in particular, subjugating their economies and manipulating their political power.

The more and more unbearable indebtedness of these countries has become a structural phenomenon whose profound effects were revealed long before the present international economic crisis. The Lester Pearson Commission estimated that in 1977, the service of the debt, i.e. the annual reimbursements of the principal and the annual interest payments, would alone exceed the total amount of the new loans by 20 per cent in Africa and 30 per cent in Latin America. In other words, the new loans which a State felt obliged to take out for its own development could not be put to that use, and would not even suffice to meet the mere annual service of the previous debt. The recently formed State would then regularly have to contract further debts, not for investment purposes, but for endless repayments. The situation now is much more burdensome for the

countries of the South.

Military expenditure in the world suggests a modern version of the myth of the bottomless vessels of the Danaides. The totalitarian folly of our times which now possesses the promethean power of inducing the explosion of millions of Hiroshimas and annihilating the human race pursues its relentless advance, as if a suicidal urge has affected the whole world. To quote Jean-Paul Sartre, 'mankind appears to have been given the means of its death.'

Colossal amounts have been poured into the arms race. In 1962, military expenditure in the world as a whole totalled some 120 billion dollars, 8 or 9 per cent of the cost of the annual world production of all goods and services. This figure equalled two-thirds of the national income of all the underdeveloped countries combined. By 1967, this expenditure had risen to \$ 182 billion. In 1974, we spent on this 'mad competition', as Jules Moch called the arms race, the fabulous sum of \$ 219 billion, equal to the national income of the poorest half of humanity, and something

like twenty times the amount of aid granted to the developing countries. In 1975, military expenditure approached \$ 300 billion. This figure can be seen in its proper light if it is compared with the total aid supplied to the Third World over the same period by the sixteen leading industrial countries of the West, less than \$ 9 billion. Lastly, Kurt Waldheim, former Secretary-General of the United Nations, calculated world military expenditure for 1976 at \$ 350 billion. In 1986 it is estimated that the world will be spending \$ 1000 billion on armament race.

The industries linked with this death-dealing sector employ over half a million scientists i.e. half the total number of scientists in the world.

A fervently appeal to all young men and women present here to become aware of these gross inequalities and distortion of human values and to keep before themselves the vision of a strong and united India free from all forms of exploitation and based on the principles of Satya, Dharma, Shanti, Prem and Ahimsa. □

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# KARNATAKA REGIONAL ENGINEERING COLLEGE SURATHKAL (D.K.)

**P.O. SRINIVASNAGAR-574 157, KARNATAKA STATE**

## NOTIFICATION

### Admission to Post-Graduate Courses for 1986-87

Applications are invited for admission to the following three semesters (Eighteen months) Post-graduate M. Tech. Courses.

- (i) Marine Structures
- (ii) Industrial Structures
- (iii) Industrial Electronics
- (iv) Heat Power
- (v) Chemical Plant Design
- (vi) Hydraulics and Water Resources Engg.
- (vii) Process Metallurgy.

#### Minimum Qualifications

The admission is open to candidates who have passed the B.E./B.Tech./B.Sc. Engineering Degree Examination with not less than 50% of marks in the aggregate in the appropriate branch of Engineering of the Mangalore University or any other Indian University or any other qualification recognised by the University of Mangalore as equivalent thereto.

Candidates who have passed the following examinations are also eligible for admission:-

1. The A.M.I.E. Examination in the appropriate subject.
2. M.Sc., Physics with Electronics or Solid State Physics for the course in Industrial Electronics.
3. M.Sc., (Chemistry)/inorganic and/or physical and/or analytical and or applied chemistry, B.E. Chemical Engineering, A.M.I.M., Master's Degree in Mineral Beneficiation/Mineral Dressing/Ore dressing of any recognised university.

A.I.M. (London), M.Sc., Applied Science with Material

Science of any recognised University with Material Science to the course in Process Metallurgy.

4. A.M.I. Chem. E. for Chemical Plant Design.

The College has well equipped laboratories with specialised equipment procured under UNESCO assistance. The Post-graduate courses cover academic work at the College and Practical Training and Project work in Industries/Research Organisations/Projects/College.

Post-graduate scholarships of the value of Rs. 1000/- per month will be granted only to those students who have passed the GATE Examination. A few candidates sponsored by the collaborating Industries and Sister Organisations will be considered for admission on non-stipendiary basis.

15% of the seats are reserved for candidates belonging to Scheduled Castes and 7½% for Scheduled Tribes.

Candidates who possess the qualifications outlined above may obtain Information Bulletin together with application form and detailed instructions including eligibility conditions etc. by sending Rs. 40/- by way of Indian Postal Order crossed (Rs. 10/- for Scheduled Castes/Scheduled Tribes) payable to the Principal, Karnataka Regional Engineering College, Surathkal, P.O. Srinivasnagar-574 157 along with self-addressed unstamped envelope of the size 23 cm x 11 cm. superscribing on the envelope "Application for Postgraduate Courses". Such of the students as have qualified in the GATE Examination and have appeared for B.E./B. Tech. Examination, but whose results are not yet announced, are also eligible to apply.

The last date to receive the filled-in application is **4-8-1986**. The Scheduled Castes/Scheduled Tribes candidate should clearly indicate that they belong to the particular category. Candidates seeking admission for more than one course should obtain and submit separate application for each course.

**Dr. T. Ramchandran**  
**PRINCIPAL**



# Mass Programme for Functional Literacy

The Adult Education Resource Centre, Gujarat Vidyapith, Ahmedabad, organised the First Training Programme for Master Trainers in connection with the mass programme for eradicating illiteracy. Thirty NSS Co-ordinators and Programme Officers from Gujarat Agricultural University, Anand and Sardar Patel University, Vallabh Vidyanagar participated in the Training Programme organised at Gujarat Agricultural University Campus, Anand, on 8th June 1986. Ms. Dolibahen Contractor, Joint Director, Primary and Adult Education, Gujarat State, apprised the participants of the SAEP and RELP projects for Adult Education in general and the importance, and administrative machinery of MPFL in Gujarat in particular.

Dr. Ramabahen Desai, Director of Adult Education Resource Centre, Gujarat Vidyapith, explained at length the nature and purpose of Mass Programme for eradicating illiteracy and promoting functional literacy in Gujarat. She explained with demonstration, the content, methodology and the use by Student Volunteers of the Self-Learning Kit prepared by the Adult Education Resource Centre, Gujarat Vidyapith. Dr. Manubhai Trivedi, Programme Co-ordinator, discussed in detail how a student volunteer is to locate an illiterate adult, enlist his co-operation in helping him acquire functional literacy within a specified time frame, and the strategy of monitoring and periodic evaluation.

Charts, posters and other relevant literature were distributed among the participants. The entire training programme was carried out in accordance with the guidelines

provided by the Directorate of Adult Education, Ministry of Human Resource Development, New Delhi and the guidebook prepared in Gujarati by the Adult Education Resource Centre, Gujarat Vidyapith.

The Second Training Programme for Master Trainers is scheduled to be organised at M.S. University of Baroda in July, 1986.

## Anna Varsity to tie up with Soviet Institutions

The Anna University, it is reported, has been identified for collaboration with Soviet institutions in the research areas pertaining to control systems and crystal growth. According to Vice-Chancellor of the University, Dr. V.C. Kulandai-swamy, this collaboration would be in the form of exchange of faculty, organisation of joint seminars and implementation of joint research plans.

## 14610 Computerised Blood Analysers for BHU

To conduct speedier bio-chemical investigations of the patients, two latest fully computerised blood analysers have been commissioned at the Institute of Medical Sciences, Banaras Hindu University, Varanasi.

Each of these analysers, imported from Italy, and fitted with the latest technology is capable of performing 30 different types of investigations on a small quantity of blood at a rate between 160-320 per hour. The computer has a memory of 250 patients' data at a time and directs the machine to take the patients blood, conduct tests and

read, calculate and print the results of the investigation at a fraction of time ordinarily taken by the manual methods. All the functions are performed automatically and there is also a built-in quality control system for accuracy.

## Admissions to Indira Gandhi National Open University

Indira Gandhi National Open University will commence its process of admission for the first academic programme in October this year. The forms will be available at over 50 study centres spread all over the country. The final selection will be made with the help of a Computer of the University of Delhi. Prof. G. Ram Reddy, Vice-Chancellor of the University, is reported to have said that except for a test aimed at evaluating the mental calibre of students, no basic qualification would be needed for the under-graduate courses. There may, however, some specific qualification for other professional courses. The medium of instructions will be both Hindi and English. According to Prof. Reddy the university will have flexible approach in offering study courses and to provide mobility of students from one system to another or from one university to another, conventional or unconventional. There will also be flexible approach with regard to the entry regulations to enable different sections of community like working people, housewives and others to take advantage of facilities offered by the Open University. The University is also working out plans to open 'sponsored study centres' in border areas for defence personnel. These centres will be different from the study centres. The funds for these sponsored studies centres will be provided by organisations sponsoring them leaving the centre's management to the university.

Besides under-graduate courses in arts and science, the university will also offer courses in Management, Computer Science, Health Care and Rural Development.

### **Open Universities in MP and Maharashtra**

●The Madhya Pradesh Government is reported to have decided

to set up an Open University in the State shortly. This was announced by the State Higher Education Minister, Mr. C.K. Jaiswal.

●The Maharashtra Government is planning to establish an Open University in the State. This was revealed by the Chief Minister, Mr. S.B. Chavan, while delivering the convocation address at the Nagpur University.

50 papers on autonomy in agricultural universities, inter-state mobility of staff and students, challenge of higher education and growth, etc. were discussed at the convention.

### **Information Systems for Agricultural Science and Technology**

An ICAR Summer Institute on Information Systems for Agricultural Sciences and Technology was recently held at Punjabrao Krishi Vidyapith, Akola. It brought together personnel involved in the information activities in different parts of the country who discussed the following topics in depth:

(1) Prospect of informatics; (2) How to meet the challenge of information technology for developing countries; (3) How to build up computerised information systems and data bases; (4) Technologies involved in information dissemination; (5) Education and training of personnel; (6) Evolving a National Information Policy with allied parameters; (7) To provide required information and knowledge in core subjects of management as applicable to Library situation; and (8) To provide specific functional skills needed for managing educational institutions with special reference to library management.

The Summer Institute that served to update the professional knowledge of Agricultural Librarians in the country was directed by Prof. P.P. Deshmukh, Librarian, Punjabrao Krishi Vidyapith.

## **News from Agril. Varsities**

### **Agricultural Varsities Association Convention**

The Indian Agricultural Universities Association, which met for its 14th Convention at Srinagar recently, recommended that agricultural universities should admit at least 20% students in all disciplines from outside the states. This would not only help in national integration but there would be greater interaction among the students who will get to know something about the culture of other states. The Association also advocated that the admission to agricultural universities should be made purely on merit. This experiment tried at Pantnagar University has been proved very successful and its Vice-Chancellor, Mr. Kripa Narain, said that his university would increase the percentage of outside students to twentyfive.

The Association decried political interference in the universities and pleaded for total autonomy. The Association also set up a working group to prepare the memorandum for bringing about improvement and

changes in the working of agricultural universities.

The Association felt concerned about slashing of funds to agricultural universities and noted that reduction in allocation of financial resources at this stage of development of agricultural universities would be detrimental to the future growth of agricultural education and research. The Association pleaded for the implementation of the Randhawa Committee recommendations and stressed the vigorous efforts by Universities to economise by co-ordination of research, improvement in efficiency and documentation of research.

Mr. Kripa Narain suggested that each university should set up a self study institutional research centre to formulate plans and projects for the future, identify efficiency and speed up on-going programmes.

About 90 delegates from 23 agricultural universities of the country attended the 3-day convention. Over

# CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/Officer to be contacted
July 22-28, 1986	Workshop on Teaching Standard Hindi Language to Dialect Speakers	To acquaint the teachers of Hindi serving in degree colleges with the problems of diglossia in Hindi in relation to the standard form and its dialectical variations.	S.D. College, Muzaffarnagar	Dr. L.N. Mittal, Workshop Director and Principal, S.D. College, Muzaffarnagar, U.P.
August, 1986	Seminar on Adult Education and Libraries	Topics to be covered are: (i) NAEP and Libraries; (ii) Public Libraries and Extensionwork; (iii) Public Libraries and Mass Communication; and (iv) Academic libraries and Extra-Mural Activities	Jiwaji University, Gwalior	Dr. S.M. Tripathi, Head, School of Studies in Library and Information Science, Jiwaji University, Gwalior.
September 13-15, 1986	National Solar Energy Convention 1986	To evaluate the current status and trends in solar energy studies; to evolve methodology for collaboration among researchers and industrialists; and to identify technologies for harnessing renewable energy sources	School of Environment and Natural Resources, Madurai Kamaraj University, Madurai	Prof. T. M. Haridasan, Organising Secretary, National Solar Energy Convention—1986 School of Energy, Environment and National Resources, Madurai Kamaraj University, Madurai
October 1-4, 1986	Third National Conference on Women's Studies	To promote the development of Women's Studies in India by providing a forum for interaction amongst individuals, institutions and organisations engaged in teaching, research or action for women's development.	Indian Association for Women's Studies, New Delhi in collaboration with Panjab University, Chandigarh	Dr. Lucy Jacob, General Secretary, IAWS, L-3-D, University Campus, Jaipur
November 9-10, 1986	National Conference on Distance Education	Topics proposed to be covered are: (i) Concept of Distance Education; (ii) Forms of Distance Education; (iii) Course Designing and Preparations; (iv) Role of Media in Distance Education; (v) Financing of Distance Education; (vi) Student Support Services; (vii) Evaluation Methodology.	Association of Indian Universities, New Delhi; Indira Gandhi National Open University, New Delhi; and Gujarat University, Ahmedabad	Prof. B. N. Koul, Indira Gandhi National Open University, K-76, Hauz Khas, New Delhi. Mr. M.M. Ansari, Project Director (Research), Association of Indian Universities, 16 Kotla Marg, New Delhi;
December 26-28, 1986	Seventh National Congress of Parasitology	Prophylaxis and control of parasitic diseases of man and his biosphere	Department of Bioscience, Ravishankar University, Raipur, in collaboration with Indian Societies for Parasitology	Dr. S.M. Agarwal (Organising Secretary) Vice-Chancellor, Ravishankar University, Raipur
January 6-9, 1987	International Seminar on Cement and Allied Building Materials	Exchange of knowledge and experience to assist the cement and building materials industries in their technological growth and development through regional and international co-operation and collaboration.	National Council for Cement and Building Materials, New Delhi	The Organising Secretary, National Council for Cement and Building Materials, M-10, South Extension Part II, Ring Road, New Delhi

# TATA INSTITUTE OF FUNDAMENTAL RESEARCH

Homi Bhabha Road, Bombay 400 005

## Advertisement No. 18/86

The Homi Bhabha Centre for Science Education (HBCSE) of the Institute is looking for students and researchers of exceptional merit to participate in its ongoing programmes of research and development in science education at different levels. Some of the principal areas of current interest at the Centre are:

- (1) Learning difficulties in science for first generation learners (cognitive, linguistic, sociocultural); designing and testing remedial measures; development of quantitative tools for evaluation, talent nurture of the underprivileged.
- (2) Non-Formal Science Education; generating and evaluating science-based curricula for school drop-outs.
- (3) Computers in Science Education; generating and testing computer-based learning packages in Mathematics and Science.
- (4) Investigating the nature and process of concept formation in science at school and college level.
- (5) Mathematical Modelling and Educational Statistics.

In addition, HBCSE brings out field-tested innovative science books and materials at various levels.

Applications are invited for the following positions at the Centre:

### 1. RESEARCH SCHOLARS

**Qualifications :** Good Master's degree in one of the natural sciences/mathematics. Candidates appearing for the final year of their Master's degree may also apply. The primary criterion of selection will be an aptitude for research combined with a strong interest in pursuing socially relevant science educational programmes. Selected candidates will have an opportunity to do research work in one of the above areas leading to a Ph.D. degree in Science Education in the Faculty of Science at the University of Poona or Bombay for which HBCSE is a recognized institution. Research Scholars will be paid a consolidated honorarium of Rs. 1400/- per month which may be raised to Rs. 1600/- per month

after two years, depending on the Scholar's progress and performance. The scholarships are offered for a period of one year in the first instance and are renewable from year to year. After completion of Ph.D., outstanding scholars may be considered for absorption in the core staff of the Centre.

### 2. POST-DOCTORAL FELLOWS

**Qualifications :** Good academic career with a Ph.D. in one of the natural sciences. The primary criterion of selection will be an evidence of good research work and a strong motivation for applying this research training to socially relevant science educational programmes. Selected Fellows will be expected to participate vigorously and take a leading role in one or more of the areas of current research interest at the Centre. Selected candidates will be offered a consolidated fellowship of Rs. 2000/- p.m. (or higher in case of candidates with exceptionally good credentials) for a period of one year in the first instance, renewable further for one or two years. At the end of the fellowship, outstanding candidates may be considered for absorption in the core staff of the Centre.

Applications on plain paper stating full particulars regarding name, address, date and place of birth, nationality, qualifications and experience (with copies of certificates and testimonials), and a write-up of about 500-750 words indicating the nature of interest the candidate has in Science Education and outlining the work the candidate would like to pursue at HBCSE, should reach the Administrative Officer (Establishment) within 30 days of this advertisement. Candidates should give names and addresses of two professors/guides with whom they have been associated during their M.Sc. Candidates applying for post-doctoral fellowships should give, besides names and addresses of three referees familiar with the academic work of the candidate, a list of publications, a short summary of doctoral work.

Applicants in the Government/Semi-Government/Public Sector Undertaking services should apply through proper channel. Candidates called for interview will be paid single second class (not airconditioned) return train fare by the shortest route from their place of residence to Bombay. Only such candidates who are called for interview will be informed of the results and no correspondence of any kind will be entertained.



# AIU Library & Documentation Services

One of the important functions of the Association of Indian Universities is to act as a clearing house of information on higher education in the country. Towards this end the AIU Library is engaged in collection, building and developing instruments for the dissemination of research information. Over the years a valuable collection of books and documents on different aspects of higher education has been acquired.

The Library has also developed Bibliography of Doctoral Dissertations as an effective tool in the dissemination of research information. Retrospective bibliographies covering the period 1857-1970 and 1970-75 were the first to appear. Effective 1975, however, the bibliography is issued annually in two volumes. One volume deals with Natural and Applied Sciences while the other records doctoral degrees awarded in Social Sciences and the Humanities. In addition to the normal bibliographical details like the name of the Research Scholar, the title of the thesis, years of registration for and award of the degree, and the name of the University accepting the thesis for award of a doctoral degree, the bibliography also gives name and complete address of the supervising teacher and an availability note that seeks to inform whether a copy of the dissertation is available for consultation and use in the University Library/Department or Registrar's Office.

The columns 'Theses of the Month' and 'Research in Progress' are intended to cut out the time lag between the receipt of information and its inclusion in bibliography. Such Universities as are not sending us regular information in respect of Doctoral Theses accepted and research scholars enrolled are welcome to make use of these columns.

The Library is open from 9.30 a.m. to 5.30 p.m. Monday through Friday.

## RESEARCH IN PROGRESS

### A list of Research Scholars Registered for Doctoral Degrees of Indian Universities

#### PHYSICAL SCIENCES

##### Mathematics

1. Yadava, Rajaram. *Hydrodynamic dispersion through porous media*. BHU. Dr. A.K. Srivastava.

##### Statistics

1. Joshi, Hemangi Dattatrya. *Contributions to the theory of optimal designs*. Shivaji. Dr. M.S. Prasad.
2. Kapse, N.S. *The study in the construction of T-designs*. Devi Ahilya. Dr. Bhagwandas.
3. Rattihalli, Satyabhama Ranganath. *Statistical inferences for stochastic processes related to replacement models*. Shivaji. Dr. M.S. Prasad.

##### Physics

1. Korade, Ashok Ekanath. *Luminescence properties of inorganic phosphors*. Shivaji. Dr. R.D. Lawangar-Pawar.
2. Patil, Shankar Ishwara. *Electrical, magnetic and micro-structural behaviour of copper-cobalt ferrites*. Shivaji. Dr. B.K. Chougule.

##### Chemistry

1. Chougule, Mahavir Annu. *Studies on the structure of polysaccharide present in mucilage of plant seeds*. Shivaji. Dr. A.K. Gupta.

2. Sangita Rani. *Synthesis of insect sex-pheromones and related systems*. Panjab. Prof. I.R. Trehan and Dr. G.L. Kad.

3. Wadhawan, Poonam. *Synthesis and characterisation of some trifluoromethane and paratoluene sulfonates of p-block elements*. Panjab. Dr. Ramesh Kapoor and Dr. Pratibha Kapoor.

##### Engineering and Technology

1. Chandra, Ramesh. *On the realisation and design of analog and sampled data networks*. Panjab. Dr. S.K. Saha.
2. Chotalla, Rajendra Singh. *Theory and applications of generalized activity networks*. Devi Ahilya. Dr. A.K. Chitale.
3. Dimri, Vinod Chandra. *Study of thermal shock on concrete*. BHU. Dr. R.D. Nautiyal.
4. Garg, Govind Prasad. *Investigations of optimal and near optimal solutions in industrial dynamics*. Devi Ahilya. Dr. A.K. Chitale.
5. Mishra, Bhanu Kumar. *Dynamic response of structures*. BHU. Prof. P.C. Upadhyay.
6. Raghunath Prasad. *Fluid flow and heat transfer*. BHU. Dr. S.N. Gupta.
7. Singh, Shashi Shekhar. *Operation research applications in mining*. BHU. Dr. B.B. Dhar and Dr. Shreerama.

#### BIOLOGICAL SCIENCES

##### Biochemistry

1. Jain, Virendra Kumar. *Studies on the high irradiance response with reference to anthocyanin synthesis*. Devi Ahilya. Dr. K.N. Guruprasad.

## Botany

1. Purohit, Sadhna. *Hormonal control of stomatal opening : Interaction of abscissic acid and phenolic compounds in regulation of stomatal movements.* Devi Ahilya. Dr. M.M. Laloraya.
2. Reena. *Studies on heterocyst and akinete differentiation in some Anabaena species.* Panjab. Dr. A.S. Ahluwalia.
3. Surekha. *Studies on the effects of herbicides on growth and differentiation in two nostoc species akinete and heterocyst as markers.* Panjab. Dr. A.S. Ahluwalia.

## Zoology

1. Ahmed, Behzad Mohammed. *Ecology of wildboar, Sus scrofa Christatus Waguer from the Western Ghats region of South Maharashtra.* Shivaji. Dr. J.S. Samant.
2. Cheema, Gurbir. *Sterility and other effects of gamma radiations on Callosobruchus maculatus and the use of sterilised sexes in pest suppression.* Panjab. Prof. H.R. Pajni.
3. Gosavi, Nandraj Bhimraj. *Studies of braconid parasitoids of the pests on cotton from Maharashtra.* Shivaji. Dr. T.V. Sathe.
4. Haq, Mainul. *Taxonomic studies on some Indian Apoderinae with particular reference to the male and female genitalia (Coleoptera : Curculionoidea, Attelabidae).* Panjab. Prof. H.R. Pajni.

5. Jaideep Kaur. *Studies on nematode parasites of fresh water fishes of Gobind Sagar Lake and its associated waters.* Panjab. Prof. N.K. Gupta, and Prof. S. Khera.

6. Kanwaljit. *Evaluation of the genotoxic potential of certain chemicals.* Panjab. Prof. G.P. Sharma.

7. Seli, Anil. *Some observations on the ecology of Callosobruchus maculatus Fabr. (Bruchidae : Coleoptera).* Panjab. Prof. H.R. Pajni.

8. Sharma, Rewa. *A study of ecology of four common species of fruit flies, (Tephritidae : Diptera).* Panjab. Prof. H.R. Pajni.

## Medical Sciences

1. Gumaste, Vijaya Vinayak. *Evaluation of the psychotropic activity of ascorbic acid.* Shivaji. Dr. A.G. Chandorkar and Dr. R.K. Shrivastava.

## Agriculture

1. Dighe, Jayant Kumar Manohar. *Pattern on nutrient uptake in wheat varieties under Malwa plateau.* Devi Ahilya. Dr. Y.M. Upadhyay.
2. Julka, Rajesh. *Inheritance of cation exchange capacity and its relationship with yield and yield components in cotton.* Devi Ahilya. Dr. M.M. Laloraya.

# THESES OF THE MONTH

## A list of Doctoral Theses Accepted by Indian Universities

### PHYSICAL SCIENCES

#### Mathematics

1. Gupta, Phalguni. *Certain semi-numerical and non-numerical algorithms on sequential/parallel computers.* IIT, Kharagpur.
2. Ramachandran, P.T. *Some problems in set topology relating group of homeomorphisms and order.* CUSAT.
3. Roy, Indira. *Abstract mathematical techniques applicable in physical sciences.* Calcutta.
4. Singh, K. Ibochou. *Laminar flows and heat transfer of macromolecular fluids.* Dibrugarh.
5. Thikare, Surendra Dada. *Stability and instability in relativistic hydrodynamics.* Shivaji.
6. Visalakshi, Ch. *Prediction of annual load fraction for active solar energy heating systems.* IIT, Kharagpur.

#### Physics

1. Chatterjee, Sarojakshya. *Influence of some metallurgical variables on magnetic properties of Zn-Mn-Al alloys.* IIT, Kharagpur.
2. Dass, Enakshi. *Studies on F-band absorption, thermoluminescence and dielectric behaviour of X-ray irradiated NaCl and KCl subjected to electric fields, dielectric properties and thermal expansion of tourmaline and optical properties of quartz crystals with X-rays.* IIT, Kharagpur.
3. Deshmukh, Nilkanth Gomaji. *Studies on the mechanoluminescence of certain fluorescent and phosphorescent molecular crystals.* Ravishankar.

4. Hanchinal, Arun Neelkanthras. *Growth and characterization of ammonium hydrogen tartrate single crystals.* Patel.

5. Keller, Kumudini. *On quantization of the general theory of relativity of Einstein.* Durgavati.

6. Lall, Wilfred Titus. *Luminescence of mixed barium, strontium, orthosilicates doped with Eu and Tb.* HS Gour.

7. Lokanatha. *Structural transformations and variation of some electrical properties with dehydration in palygorskite, attapulgite and sepiolite.* IIT, Kharagpur.

8. Madhusudana, Rao, P. *Investigations on doped  $(\text{NH}_4)_2\text{ZnBr}_4$ .* Hyderabad.

9. Majumdar, Bishnu. *Studies on the mechanoluminescence of zinc sulphide and other phosphors.* Ravishankar.

10. Mishra, Vipasha. *Investigation of defect properties of binary solids.* Durgavati.

11. Shrivastava, Krishna Kumar. *Studies on the mechanoluminescence of organic molecular crystals.* Ravishankar.

12. Warad, Arun Uttareshwar. *Studies on electrochemical photovoltaic solar cells formed with Bi doped CdS films.* Shivaji.

#### Chemistry

1. Acharya, Kanchan. *Physico-chemical studies in solvents of high dielectric constant : Dissociation equilibria and related thermodynamic properties of some bases in formamide.* IIT, Kharagpur.

2. Bapat, Kishore Narayan. *Study of the kinetics and mechanism of redox reactions in solution pertaining to cerium (IV) and thallium (I) system.* Ravishankar.

3. Baruah, Putul. *Chemical examination of insecticidal plants.* Dibrugarh.

4. Chandrakar, Lalita Prasad. *Studies on imidoyl chloride derivatives and their applications in analysis.* Ravishankar.
5. Chandra, Kunda. *Chemical and Biochemical studies on some cultivated and wild varieties of seeds.* Durgavati.
6. Chowdhury, Manju. *Studies on mixed carboxylatofluoro complexes of uranyl ( $UO_2^{+}$ ) ion.* IIT, Kharagpur.
7. Das, Anil Prasad. *Studies on synthetic resins.* Utkal.
8. Kar, Gandhi Kumar. *Studies on lactams and other heterocyclic compounds.* IIT, Kharagpur.
9. Mahapatra, Bimal. *Synthetic studies on the naturally occurring diterpenoids.* IIT, Kharagpur.
10. Mohanan, K. *Metal chelates of tridentate schiff bases.* Calicut.
11. Mukhopadhyay, Atreyi. *Microbiological transformation of steroids.* Calcutta.
12. Neelam. *Synthesis in sex pheromones.* Panjab.
13. Prasad, S.V.S. *Solid state and catalytic properties of iron (III) : copper (II) mixed oxide systems.* IIT, Kharagpur.
14. Samal, Rajani Kanta. *Vinyl polymerization and modification of polymers through chemical initiations, their characterisation and behaviour.* D. Sc. Utkal.
15. Sarma, Jadav Chandra. *Chemical transformations of naturally occurring sesquiterpenes.* Dibrugarh.
16. Siva Prasad, A. *Studies on pyrimidine derivatives and related heterocycles.* Dibrugarh.
17. Srivastava, Rishi. *Purification and characterization of an acid phosphatase from *Arachis hypogaea*.* IIT, Delhi.
18. Vaishnav, Hima Nilkanthrai. *Studies on metal complexes of some formazon dyes.* Patel.
19. Vatsala, S. *Studies on metal chelates of azo dyes.* Calicut.

#### Earth Sciences

1. Akhter, Humayun. *Geological and thermoluminescence studies on crystalline limestones from a highly deformed terrain of Jabar, Purulia District, West Bengal, India.* IIT, Kharagpur.
2. Bhattacharyya, Pritimay. *Utilisation of a single type of orthogonal polynomial based operators for image analysis.* IIT, Kharagpur.
3. Datta, Rattan K. *Certain dynamical aspects of monsoon circulation and its prediction.* IIT, Delhi.
4. Mitra, Rathindra Nath. *Pattern of copper mineralisation at Surda Singhbhum District, Bihar with a note on its minability aspects.* IIT, Kharagpur.
5. Mortazavi, Mehdi. *Solid state control of high speed electric drives.* IIT, Delhi.
6. Roy, Subrata R. *Morphology of the Taraphini Basin, through remote sensing techniques and flood mitigation.* IIT, Kharagpur.

#### Engineering and Technology

1. Aditya, Anup Kumar. *Bending analysis of doubly curved shell structures by finite element method.* IIT, Kharagpur.
2. Ailwadi, O.P. *Elasto-plastic finite element analyses of rock slopes.* IIT, Delhi.
3. Ali, Mohammad Sekendar. *Transient stability of large scale power systems : Development and implementation of new algorithms.* IIT, Kharagpur.
4. Ananda Mohan, S. *Studies on rectangular coaxial line.* IIT, Kharagpur.
5. Ananth, V. *Influence of impressed direct current and short circuiting on the oxidation behaviour of copper and iron and*

*on the reduction kinetics of wustite at high temperatures.* IIT, Kharagpur.

6. Bendapudi, Seishu. *LPE growth and characterisation of heavily doped n-Inp.* IIT, Kharagpur.
7. Bhatia, Harbhajan Singh. *Bioelimination mechanisms of aqueous waste compounds through vascular plants.* IIT, Delhi.
8. Bhattacharyya, Arun Kumar. *Generalized transmission line model of microstrip patch antennas and some applications.* IIT, Kharagpur.
9. Bhattacharya, Satchidananda. *Studies on stress corrosion cracking in steels.* IIT, Kharagpur.
10. Bhattacharya, Sati Nath. *Some stability problems in hydrodynamics and hydromagnetics.* IIT, Kharagpur.
11. Bhattacharya, Vijay Krishna. *Studies on concrete-polymer and related composite polymer-impregnated mortars.* IIT, Kharagpur.
12. Chakravarty, Tapas Kumar. *Some Studies on condensation heat transfer in diverging-converging tube.* IIT, Kharagpur.
13. Chandrakar, Saroj Kumar. *Gas dispersion in non-newtonian Liquid : Jet ejectors and two-phase co-current vertical up-flow.* IIT, Kharagpur.
14. Chattopadhyay, Ajit Kumar. *Static and dynamic characteristics of finite porous oil journal bearings considering tangential velocity slip.* IIT, Kharagpur.
15. Dasgupta, Amitava. *Studies on fluid power systems with alternating flow.* IIT, Kharagpur.
16. Das, Kamala Kanta. *Some availability and preventive maintenance models for thermal power plants.* IIT, Kharagpur.
17. Datta, Asis Baran. *Development of glass fibres compatible with portland cement.* IIT, Kharagpur.
18. Datta, Biswanath. *A study on dynamic behaviour of hydraulic servomotor with asymmetric actuator.* IIT, Kharagpur.
19. De, Asoke. *Studies on rectangular and circular microstrip patch radiators.* IIT, Kharagpur.
20. De, Tarun Kumar. *Reversible enhancement de-enhancement process for digital images.* IIT, Kharagpur.
21. Gowda, S. Jayare. *Performance and optimization of seed processing industry in selected seed zones of Karnataka State.* IIT, Kharagpur.
22. Kal, Santiram. *Development of thick film pig paste and studies on reciprocal and nonreciprocal MIC components.* IIT, Kharagpur.
23. Kuriakose, Baby. *Studies on thermoplastic elastomers with special reference to natural rubber : Polypropylene blends.* IIT, Kharagpur.
24. Malik, Rajinder Kumar. *Studies on separation of ethanol from fermented broth by adsorption and desorption.* IIT, Delhi.
25. Moorthy, H. Krishna. *An operational transform technique to construct Lyapunov functions for transient stability analysis of electrical power systems.* IIT, Kharagpur.
26. Pangasa, Rakesh Kumar. *Planning and organising industrial research and development for improved organizational effectiveness.* IIT, Delhi.
27. Patra, Kartik Chandra. *Analysis of self-oscillations and signal stabilization of two dimensional nonlinear systems.* IIT, Kharagpur.
28. Phadke, Ajit Arvind. *Studies on reclaimed rubber with special reference to cryoground rubber.* IIT, Kharagpur.
29. Prasad, B.V.S.S.S. *Convective heat transfer experiments and numerical solution of conduction arbitrary body shapes.* IIT, Kharagpur.
30. Raji Reddy, Antham. *Some studies on surface acoustic wave transducers, low loss filters and oscillators.* IIT, Kharagpur.

31. Ramarao, P.V. *Studies on some aspects of electro-discharge machining.* IIT, Kharagpur.
32. Ranganathan, V. *Studies in parameter estimation using Laguerre polynomial approach.* IIT, Delhi.
33. Rath, Girija Shankar. *On splines, spline transform and application to handprinted Oriya character recognition.* IIT, Kharagpur.
34. Ray, Debabrata. *Combustion and heat transfer in fluidized beds.* IIT, Kharagpur.
35. Ray, Goutam Kumar. *Policy planning for growth of an aluminium industry in India : A system dynamics study.* IIT, Kharagpur.
36. Saha, Sudhendu. *A study of the dynamic behaviour of pile foundations.* IIT, Kharagpur.
37. Sharma, Praveen Kumar. *Analysis of blade stress and mechanics of digging with a manually operated spade.* IIT, Delhi.
38. Singhai, K.C. *Studies on ethanol carburation in compression ignition engines : Performance, combustion and exhaust emission characteristics.* IIT, Delhi.
39. Singh, Birendra Kumar. *Thin and thick wing problems in inviscid incompressible flow.* IIT, Kharagpur.
40. Sinha, Ram Uday. *Some aspects of a microprocessor based controller for multivariable system regulation.* IIT, Kharagpur.
41. Talukdar, A.K. Monowar Hossain. *Studies on polyurethanes from various mixtures of cellulose and non-edible vegetable oils : Preparation, characterisation and kinetic studies.* Panjab.
42. Tiwari, Anup Kumar. *Investigations on dielectric integrated guides for millimeter wave applications.* IIT, Delhi.
43. Waghodekar, Prabhakar Harischandra. *On some applications of similarity coefficient to group technology and facility layout.* IIT, Kharagpur.

UGC Sponsored

## ALL INDIA AUTUMN INSTITUTE IN QUANTUM MECHANICS 1986

To be held at the

CENTRE FOR DEVELOPMENT OF PHYSICS EDUCATION

**UNIVERSITY OF RAJASTHAN**

**JAIPUR**

APPLICATIONS are invited from College teachers from all over the country for admission to "All India Institute in Quantum Mechanics" to be held at the Centre during the ensuing Dasheera break. The tentative dates are from October 14 to October, 28, 1986.

The Institute will consist of lecture courses on Quantum Mechanics (non-relativistic as well as relativistic) followed by problem sessions. In addition, participants will be given preliminary training on 'computer programming' and may be required to solve numerical quantum mechanical problems on computer. The participants will be required to attend all the programmes of the Institute compulsorily without any exception. They will also be required to stay during the entire duration of the Institute.

Travelling expenses to the extent of single first class return railway fare from their place to Jaipur and back will be paid to the participant. Daily allowance admissible as per U.G.C./University rules may be used for meeting their boarding expenses. Lodging will be compulsory at the place provided for the purpose in the University campus.

Candidates already admitted in the Institutes held in 1979, 1981 and 1983 may not be considered for admission.

A few teachers from universities and IIT's may also be considered for admission. But they will be required to arrange their expenses from their home institution.

Applications on plain paper giving the following details, duly forwarded by the Head of the institution, must reach the address given for the purpose by **July 31, 1986** : 1. Name with qualifications, 2. Date of Birth, 3. Designation, 4. Teaching experience (including experience of teaching quantum mechanics to post graduate classes), 5. Official address, 6. Address for correspondence, 7. Any other information, 9. Signature of the teacher, 10. Application of (Name of the teacher) is forwarded with the remark that if admitted to the institute he will be permitted to attend the same for the entire duration. Signature of the head of the institution.

Applications must be sent at the following address :

**N. K. Sharma**

**Dy. Director**

**Centre for Development of Physics Education**

**University of Rajasthan, Jaipur-302 004**

**Prof. S. Lokanathan**  
**DIRECTOR**

DIS/1041/86 D



# DIRECTORATE OF CORRESPONDENCE COURSES HIMACHAL PRADESH UNIVERSITY

SUMMER HILL, SHIMLA-171005

## Admission Notice 1986-87

The Directorate of Correspondence Courses of Himachal Pradesh University imparts instruction through correspondence in the following courses/subjects:-

M.Ed.	1 year course in two semesters
M. Com.	2 year course in four semesters
M.A. in English, Hindi, Sanskrit, Economics, History, and Political Sc.	2 year course in four semesters
B.A. Parts I, II and III	3 year course—annual system
1st year of 10+2	1 year course—annual system.

**Medium of Instruction :** The medium of instruction is either Hindi or English according to the choice of the students in case of under-graduate classes while in M.Ed./M.Com./M.A. classes the medium of instruction except for Hindi and Sanskrit subject is English.

**Contact Programmes** of various duration are arranged usually at Shimla, Delhi, Madras, Ajmer, Calcutta for M.Ed. class and Delhi/Chandigarh/Shimla for M.Com./M.A. classes depending upon a sizable number of students. For under-graduate classes contact programmes are arranged within the state of Himachal Pradesh.

**Special Feature :** systematically developed self-instructional study material for high inter-actional value mailed well in advance, carefully prescribed assignments of self-evaluation and tutor valued

type and contact programmes designed to create a rich exposure by a selected team of specialists and learned scholars in the field. Besides, the Directorate has a well equipped library with more than 11,000 books and provides useful and active service to the students enrolled for the correspondence courses of the University. Admission for the above mentioned classes begins from 1st July, 1986 and shall remain in force as per schedule given below:-

M.Ed./M.Com./M.A. classes	11th August, 1986 without late fee
	30th August, 1986 with late fee of Rs. 10/-
1st year of 10+2 and BA	30th August, 1986 without late fee
	30th September, 1986 with late fee of Rs. 10.

### Note

1. Admissions are made on **first come first served** basis and with a view to effect quality instruction, the Directorate adopts a policy of having a manageable size of clientele in each subject of study.
2. For detailed rules for admission etc. please apply for prospectus against payment of Rs. 10/- at the DCC counter or by remitting Rs. 15/- through Bank Draft/IPO drawn in favour of the Director, Directorate of Correspondence Courses, H.P. University, Shimla - 171005.

Advt. No. 13/86-HPU-PRO

K.P. Pandey  
DIRECTOR

## Guru Nanak Dev University, Amritsar

Advertisement No. 10/86

### Applications for the post of REGISTRAR

Applications are invited for the post of Registrar in the pay scale of Rs. 1775-75-2000/100-2400 + Rs. 100/- as special pay, on prescribed form obtainable from the office of Registrar by making a written request accompanied by a self-addressed envelope of 23 x 10 cms, so as to reach the Secretary to Vice-Chancellor by **31-7-1986** alongwith crossed Indian Postal Order for Rs. 10/- (non-refundable) drawn in favour of the Registrar, Guru Nanak Dev University, Amritsar.

Persons already in employment should send their applications through their employers. Higher start in the grade may be given depending upon qualifications and experience.

### QUALIFICATIONS

- (1) At least second class Master's degree from a recognized University or its equivalent.
- (2) Knowledge of Punjabi upto Matric.
- (3) At least 10 years teaching/administrative experience including 3 years as a Principal of an affiliated college/Head of a University teaching department/Head Post Graduate Department in an affiliated College/Deputy Registrar or equivalent in a University/Deputy Secretary or equivalent in Govt./Govt. Undertaking/D.D.P.I. or equivalent.

As per Act and Statutes of Guru Nanak Dev University, Amritsar, the term for the post of Registrar is four years or upto the age of 60 years, whichever is earlier. The term is renewable.

REGISTRAR

## ADMISSIONS

### MAULANA AZAD COLLEGE OF TECHNOLOGY: BHOPAL (M.P.)

(A Regional Engineering College)

### POST GRADUATE ADMISSION NOTICE : 1986-87

Advertisement No. ACD/1/86-87

Applications are invited for admission to the Industrially Oriented M. Tech. Courses for the session 1986-87, the selection for which will be on all India basis.

#### Duration of Courses

The Courses duration is 1½ years for full time candidates and 2½ years for part time candidates.

#### Qualifications

The minimum qualifications prescribed for admission is a Bachelor Degree in Engineering of Bhopal University or an equivalent examination with at least 50% marks in the aggregate at the Final Year Examination. In addition the candidates for admission to full time courses should have qualified at GATE (Graduate Aptitude Test in Engineering).

The candidates to be admitted to Part Time courses should possess two years experience in Design/Manufacture in order to qualify for exemption from Industrial

Training which is a part of the M. Tech. Scheme. A teacher imparting instruction in Engineering shall be eligible for exemption from industrial training if he has already undergone industrial training of equivalent period prior to commencement of the semesters in which the training is provided in the scheme.

#### Courses

The full time as well as part time M. Tech. courses are offered in the six specialisations indicated below. The branch in which the B.E. Degree is required in respect of each course is also indicated.

#### Seats and Reservations

Provision has been made to admit a maximum of 50 candidates to the full time M. Tech. Courses (not exceeding nine in each course) against open category seats. Provision has also been made to admit 10 candidates of Scheduled Caste category (not exceeding 2 per course) and 5 candidates of Scheduled Tribes category (not exceeding one per course).

#### Post Graduate Stipend

The GATE qualified candidates admitted to full time M. Tech. courses are eligible for the award of Post Graduate Stipend of Rs. 1000/- per month subject to rules of the scheme.

#### Method of Applying

Applications should be on prescribed

(i) Design and Production Engg. Heavy Electrical Equipment.	Electrical Engineering
(ii) Design and Production Engineering-Power Plant Machinery-Hydro-Electric.	Civil/Mechanical/ Electrical/ Agricultural Engineering.
(iii) Design and Production Engineering-Power Plant Machinery-Thermal.	Mechanical/ Electrical/ Automobile/ Chemical/Agricultural Engg.
(iv) Engineering Materials for Design and Production of Heavy Engg. Equipment.	Civil/ Mechanical/ Electrical/ Metallurgy/ Chemical/ Agricultural Engg.
(v) Foundation Engineering-Applied to Vibratory Systems.	Civil Engineering.
(vi) Stress and Vibration Analysis of Machinery and Structure.	Civil/ Mechanical Engineering.

form which could be obtained from the Registrar of the College on payment of Rs. 10/- in the form of crossed IPO/Bank Draft payable to M.A.C.T., BHOPAL. The last date for receipt of completed application is 19th August, 1986. Forms will be available for sale after 10th July, 1986. The choice for various courses may be made on the same application form. The applications received after the last date are likely to be rejected.

PRINCIPAL

### ANNA UNIVERSITY MADRAS-25

### S.C./S.T. TEACHER TRAINING PROGRAMME

Advt. No. 17140/L3/86 Dated 1-7-1986

Applications are invited in the prescribed form from candidates belonging to S.C./S.T. for recruitment as TEACHER TRAINEES.

Qualification : B.E. or B. Tech.

Stipend : Rs. 1,300/- per month.

Age Limit : 27 Years.

Training Period : 3 Years.

During the period of training the trainees will be provided with an opportunity to qualify for Master's Degree on a part-time basis within a period of three years.

On successful completion of the training, the trainee will be considered for direct appointment as Lecturer in the Scale of Pay of Rs. 700-40-1100-50-1600, with effect from the date of joining as trainee and pay fixation will consist of increments for the period of training.

Application form and other details can be had on requisition accompanied by a crossed Indian Postal Order for Rs. 5/- (Rupees Five only) dated not earlier than 1-7-86 in favour of the Registrar, Anna University, Madras-25, together with a self-addressed stamped envelope (Re. 1.20) of size 22 cm x 10 cm. Requisition for application form and other details will be entertained upto 28-7-86.

Last date for receipt of completed application form is 31-7-86.

REGISTRAR

# APPOINTMENTS

## INDIRA GANDHI NATIONAL OPEN UNIVERSITY

NEW DELHI-110 001

Advertisement No. 4/86.

Applications are invited from Indian citizens for filling up the following posts in the Indira Gandhi National Open University:—

### COMPUTER DIVISION

#### 1. PROFESSOR/DIRECTOR

**Scale of Pay :** Rs. 1500-60-1800-100-2000  
125/2-2500 plus usual allowances.

#### Qualifications and experience :

**Essential :** An eminent scholar with published work of high quality, engaged in research or work experience in the area of computer applications. About 10 years experience of teaching, research and/or extension or applied work in computer area. Experience of guiding research at doctoral level or an outstanding scholar with established reputation who has made significant contribution to knowledge or application of computers in industry or other establishments.

**Desirable :** Doctorate degree in computer science/electronic engineering with specialisation in computer/ physics/ electronics/ computer engineering/ mathematical statistics. About 5 years experience of work in computer systems as well as on the development of computer science techniques relevant to natural and social sciences.

OR

Master's degree in computer science or Master's degree in Mathematics with Statistics and a Diploma in Computer Science from a recognised University with minimum of 15 years experience in computer systems development, computer programming and in conducting training programmes in computer science data communications of which at least 10 years should be in an independent capacity in developing systems/running computer centres.

#### 2. READERS/ SENIOR SOFTWARE ENGINEERS

**Scale of Pay :** Rs. 1200-50-1300-60-1900  
plus usual allowances.

#### Qualifications and Experience

**Essential :** Academic record with a doctorate degree or equivalent published work. Evidence of being actively engaged in (a) research or (b) innovation in teaching methods, or (c) production of teaching materials.

About 5 years experience of teaching and/or research or work experience in computer applications provided that at least 3 years were as a lecturer or in any equivalent position associated with computer systems.

OR

(a) Master's degree in Computer Science or Master's Degree in any discipline with a Diploma in Computer Science or a Bachelor of Engineering in Computer Science/ Electronics and Telecommunications.

(b) Minimum of 5 years experience in Computer System Development, Computer Programming and in conducting training programmes in Computer Science/Data Communications.

**Desirable :** Computer Systems, models and performance evaluation/ Software Engineering/ Artificial Intelligence/Knowledge based Systems/ Pattern recognition/ Digital Image process/ Micro computer architecture application/ computer graphics/ excellent oral and written communication ability.

#### 3. LECTURERS/ SOFTWARE ENGINEERS

**Scale of Pay :** Rs. 700-40-1100-50-1600  
plus usual allowances.

#### Qualifications and Experience

**Essential**

(a) Doctoral degree or research work of an equally high order.

(b) Good academic record with at least Second Class (C in the 7-point scale) Master's Degree in relevant subjects from an Indian University or an equivalent degree from a Foreign University.

OR

(a) Master's Degree in Computer Science or Master's Degree in any discipline with a Diploma in Computer Science or a Bachelor of Engineering in Computer Science/Electronics and Telecommunications.

(b) A minimum of 2 years experience in

Computer Systems Development, Computer Programming and in conducting training programmes in Computer Science/Data Communications.

**Desirable :** At least 3-4 years experience in computer programming, software engineering, performance evaluation, office management, computer graphics, excellent oral and written communication ability with practical experience in a computer centre.

#### 4. SENIOR TECHNICAL ASSISTANTS/ PROGRAMMING ASSISTANTS/ CONSOLE OPERATION SUPERVISORS

**Scale of Pay :** Rs. 550-25-750-EB-30-900  
plus usual allowances.

#### Qualifications and Experience

**Essential :** Master's Degree in any discipline with Diploma in Computer Science or Bachelor of Engineering in Computer Science/ Electronics and telecommunication.

OR

Bachelor's Degree (I Class) in any discipline with 3 years experience in programming and system development.  
Age Limit—35 years.

#### 5. TECHNICAL ASSISTANT/ CONSOLE OPERATORS

**Scale of Pay :** Rs. 425-15-500-EB-15-560  
20-700 plus usual allowances

#### Qualifications and Experience

**Essential :** Minimum of II class graduate in any discipline

**Desirable :** Experience of working in a computer centre as an operator.  
Age Limit—30 years.

#### 6. DATA ENTRY OPERATORS

**Scale of Pay :** Rs. 260-6-326-EB-8-350  
plus usual allowances.

#### Qualifications and Experience

**Essential :** Higher Secondary (10+2) and 40 words per minute of typing speed.

**Desirable :** Experience on Data Entry Machines.  
Age Limit—25 years.

### COMMUNICATION DIVISION

#### 7. JOINT DIRECTORS (Radio/Audio) and (Television/Video)

**Scale of Pay :** Rs. 1500-60-1800-100-2000  
plus usual allowances.

## Qualifications and Experience

### Essential

1. Master's Degree of a recognised University, preferably in Mass Communication/ Communication/ Instructional Technology / Distance Education/ Journalism.
2. At least 10 years professional experience in media management, including planning and production of radio/ audio and television/ video programmes, of which at least 5 years should be on a responsible position in a broadcasting organization.

### Desirable

1. Doctorate Degree in Mass Communication/ Communication/ Instructional Technology/ Distance Education/ Journalism.
2. Experience in educational radio/educational television broadcasting.
3. Good knowledge of broadcasting/ television broadcasting systems in India and abroad.

Age Limit—50 years.

**Note :** For the post of Joint Director (Radio/Audio) experience in radio/audio field will be considered and for the post of Joint Director (Television/Video) experience in the television/video field will be considered.

## 8. JOINT DIRECTOR (Research and Development)

**Scale of Pay :** Rs. 1500-60-1800-100-2000 plus usual allowances.

### Qualifications and Experience

#### Essential

1. Master's Degree of a recognized university, preferably in Mass Communication/ Communication/ Instructional Technology/ Distance Education/ Journalism/ Psychology/ Sociology/ Marketing/ Anthropology.
2. At least 10 years experience in communication/ audience/ social/ behavioural research, of which at least 5 years should be in a responsible position in a media or educational organization.

#### Desirable :

1. Doctorate Degree in Mass Communication/ Communication/ Instructional Technology/ Distance Education/ Journalism/ Psychology/ Sociology/ Marketing/ Anthropology.
2. Post-graduate diploma in research methodology.

3. Experience in formative and summative research on radio/television or films.

Age Limit—50 years.

## 9. READER/DEPUTY DIRECTOR (Graphics)

**Scale of Pay :** Rs. 1200-50-1300-60-1900 plus usual allowances.

### Qualifications and Experience

#### Essential

1. Master's Degree of a recognized university.

#### OR

- Degree or Diploma in graphics/photography/ design/ animation from a recognized University or Institute.
2. At least 8 years professional experience in graphics/ photography/ design, of which at least 5 years should be in a media/ advertising/ educational organization.

#### Desirable

1. Practical experience in planning, production and utilization of graphics in media.
  2. Specialization in TV graphics.
- Age Limit—45 years.

## 10. PRODUCERS (Radio) and (Television)

**Scale of Pay :** Rs. 700-40-1100-50-1600 plus usual allowances

### Qualifications and Experience

#### Essential

1. Master's Degree of a recognized university, preferably in Mass Communication/ communication Instructional Technology / Distance Education / Journalism.
2. At least 5 years experience in planning and production of Radio/T.V. programmes.

#### Desirable

1. Practical experience in production of educational radio/T.V. programmes.
2. Ability to handle a variety of subjects and formats for production of radio/television programmes including plays, features, documentary, etc.

Age Limit—35 years.

**Note :** For the post of Producer (Radio) experience in the Radio field will be considered and for the post of Producer (Television) experience in the T.V. field will be considered.

## 11. PRODUCTION ASSISTANTS (Radio) and (Television)

**Scale of Pay :** Rs. 425-15-500-EB-15-560-20-700 plus usual allowances.

## Qualifications and Experience

### Essential

1. Degree of a recognized university.

#### OR

Diploma of National School of Drama or equivalent qualifications (for Radio) Degree of recognized University.

#### OR

Diploma of FTII, Pune in Cinema (for T.V.)

2. At least 2 years professional experience in production of Radio/TV/ film/theatre.

### Desirable

1. Practical experience in production of educational radio/TV programmes.
2. Ability to handle a variety of subjects, and formats for production of radio/ audio and television/video programmes.

Age Limit—30 years.

**Note :** For the post of Production Art (Radio) experience in the radio field will be considered, while for the post of Production Art (Television) experience in the TV field will be considered.

## 12. ENGINEER INCHARGE

**Scale of Pay :** Rs. 1200-50-1300-60-1900 plus usual allowances.

### Qualifications and Experience

#### Essential :

1. B.E./B. Tech. in Electronics/Telecommunications/ Electrical Engineering or its equivalent, of a recognized university.
2. At least 5 years professional experience in installation, operation and maintenance of radio and/or T.V. production equipment and facilities.

#### OR

1. M.E./M.Tech. in Electronics/ Telecommunication/ Electrical Engineering or its equivalent.
2. At least 3 years experience in installation, operation and maintenance of radio and T.V. production equipment and facilities.

#### Desirable

1. Good knowledge of broadcasting systems in India and abroad.

Age Limit—45 years.

## 13. ASSISTANT ENGINEERS

**Scale of Pay :** Rs. 700-40-900-EB-40-1100-50-1300 plus usual allowances.

### Qualifications and Experience

#### Essential

1. B.E./B.Tech. in Electronics/ Telecommunications/Electrical Engineering or its equivalent, from a recognized university.



2. Atleast two years experience in installation, operation and maintenance of radio/TV/films production equipment and facilities.

**Desirable :**

1. Good knowledge of broadcasting systems in India and abroad.

Age Limit—35 years.

**14. TECHNICAL ASSISTANTS**

**Scale of Pay :** Rs. 425-15-500-EB-15-560-20-700 plus usual allowances.

**Qualifications and Experience**

**Essential :**

1. Diploma in Electrical Engineering, Electronics or Sound, from a recognized institute.

2. Atleast 2 years experience of handling TV/sound equipments, experience of operation of Radio and T.V. equipment, video/film equipment.

**Desirable**

1. Knowledge of Radio and T.V. engineering.

2. Good knowledge of broadcasting systems in India.

Age Limit—30 years.

**15. CAMERAMAN**

**Scale of Pay :** Rs. 650-30-740-35-810-EB-35-880-40-1000-EB-40-1200 plus usual allowances.

**Qualifications and Experience**

**Essential**

1. Degree/Diploma in Cinematography.

2. Atleast 3 years experience with video/film cameras.

3. Technical background with complete knowledge of working and mechanical functions of film and video cameras.

**Desirable**

1. Experience of working in a television organization.

2. Good knowledge of broadcasting systems in India.

Age Limit—35 years.

**16. FLOOR ASSISTANTS**

**Scale of Pay :** Rs. 425-15-500-EB-15-560-20-700-plus usual allowances.

**Qualifications and Experience :**

**Essential :**

1. Diploma/Degree in dramatics and, equivalent qualifications, preferably, with the specialization in Stage Craft/T.V. production.

2. Atleast 2 years experience of working in a T.V. studio.

**OR**

1. Higher Secondary Examination or equivalent qualification.

2. Atleast 6 years experience in floor management for TV/film/ stage production.

Age Limit—30 years.

The following general conditions are applicable to all posts at 1 to 3 and 9 above :

(a) Additional qualifications : Experience and proven ability in imparting education through various communication media and innovations in distance teaching methods and materials.

(b) Job Requirements : Academics of this University will have the following responsibilities :

1. Curriculum and course development.

2. Preparation of sub-instructional print material.

3. Preparation of and participation in the production of audio-video materials.

4. Participation in contact programmes, workshops, week-end programmes, summer institutes, face-to-face teaching etc.

5. Undertaking of research—individual, institutional, sponsored etc.

In addition to pay, the posts carry all allowances as per UGC norms. Higher start in the prescribed scale may be given in deserving cases on the recommendation of the Selection Committees. In a few cases, the University would be able to provide accommodation.

The prescribed application forms can be had from the Registrar, Indira Gandhi National Open University, YMCA Cultural Centre, Jai Singh Road, New Delhi-110001 on a written request by post and accompanied by a self-addressed envelope (size 13 cms X 28 cms) bearing postage stamps of Re. 0.90. Completed application forms alongwith attested copies of degrees, other certificates, mark-sheets, published research articles, experience etc., should reach the Registrar at the above address on or before 7-8-1986. The originals of the above certificates should be produced at the time of the interview.

Some posts of Lecturers are reserved for Scheduled Caste/Scheduled Tribe candidates as per rules. If no suitable candidate is found from SC/ST categories the posts will be treated as unreserved and selection will be made from the general candidates.

Candidates called for interview from outside Delhi will be paid single second class railway fare to and fro by the shortest route from their place of residence/work.

Canvassing in any form by or on behalf of a candidate will be a disqualification.

Applications received after the last date or without complete information will not be entertained.

**NOTE :**

1. It will be open to the University to consider the names of suitable candidates who may not have applied. Relaxation of age and any of the qualifications may be made in exceptional cases, in respect of all the posts on the recommendations of the Selection Committee.

2. The University reserves the right not to fill up any of the vacancies advertised if the circumstances so warrant.

**REGISTRAR**

**TATA INSTITUTE OF SOCIAL SCIENCES**

**Deonar, Post Box No. 8313,  
BOMBAY-400088**

Applications are invited for the following post. The prescribed application form along with the details of qualification, experience, etc., should be obtained from the above address either in person or by post along with a stamped (Re. 1.50) self-addressed envelope superscribed "REQUEST FOR APPLICATION FORM FOR TEACHING POST."

**Reader in the Unit for Research and Consultancy in Social Policy and Social Welfare Administration (One post)** in the scale of pay of Rs. 1200-50-1300-60-1900. The total emoluments in the minimum of the scale is Rs. 3,057.85 per month, and in the maximum Rs. 4,152.30 per month.

The last date for request for application form : **25th July, 1986.**

Application made on plain paper will be rejected.

**N. Krishnamoorthy  
REGISTRAR**

**BANARAS HINDU UNIVERSITY  
Corrigendum to Advertisement No. 1/1986-87**

The Grade for the post of **Radiological Physicist (Item No. 73)**, Institute of Medical Sciences may be read as Rs. 700-1600 instead of Rs. 700-1300.

## BANASTHALI VIDYAPITH

(Deemed to be University)

Applications are invited for the posts of Deputy Registrars-2.

### Qualifications : Essential

(a) First or High Second class Post-graduate degree.

(b) At least eight years administrative experience in a position involving supervision, control and planning.

**OR**

Eight years teaching experience in a University or a Post-graduate College with experience in educational development.

### Desirable

(a) Familiarity with the life and working of a University or with educational administration in a College, University or an Institute of Higher learning or research.

(b) A degree or Diploma in Management or Law.

(c) Experience of teaching in a College or University.

(d) Familiarity with Development, planning and project, U.G.C. Schemes.

**Grade:** U.G.C. Scale 1200-50-1600-60-1900 (total initial emoluments 2610).

**OR**

Rajasthan Government grade 1500-50-1800-60-2100-75-2250 (total initial emoluments 2400) as per recommendations of the Selection Committee.

**Note:** Vidyapith reserves the right to fill or not to fill the posts or to reduce or increase the number.

P.F., Gratuity-cum-Insurance, Group-Insurance benefits on confirmation. Habitual wearing of KHADI compulsory on appointment. Applications on prescribed form, (obtainable by sending postal order of Rs. 10) must reach the Secretary, Banasthali Vidyapith (Raj.) 304022 within thirty days of advertisement 6/86.

**AWADESH PRATAP S NGH  
UNIVERSITY, REWA, M.P.**

**No. Personnel/86/2260      Dated : 3-7-86**

### CORRIGENDUM

The last date for submission of applications for the posts of Readers in the Department of Economics and Physics advertised earlier is extended upto 31-7-86 instead of 16-6-86. Other terms and conditions of the advertisement will remain the same.

**REGISTRAR**

## INDIAN INSTITUTE OF SCIENCE

BANGALORE - 560 012.



### Faculty Positions in Life Sciences

The Institute is looking for brilliant and highly motivated young scientists (Indian Nationals) below the age of 35 years with experience in modern approaches, to carry out research and teaching in frontier areas of Biology. The research interest at the Institute cover a wide spectrum in the area of life sciences, cutting across the different groups and departments involved. Some of the major areas of interest are :

\*Genetics and Molecular Biology

\*Proteins and Enzyme  
Mechanisms

\*Microbiology and Immunology

\*Molecular Endocrinology and  
Reproductive Biology

\*Neurochemistry and  
Bioenergetics.

The applications should have a record of original publications to their credit and be capable of carrying out independent work. Candidates with a Ph.D. degree and at least 3 years of post-doctoral experience in any one of the above or related areas are encouraged to apply for faculty positions at the level of Assistant professors. The total emoluments at the minimum of the scale are around Rs. 37,000 per annum. Relaxation of age limit and offer of higher positions will be considered for exceptionally qualified candidates. Interested persons should send their bio-data with career objectives to **The Chairman Division of Chemical and Biological Sciences, Indian Institute of Science, Bangalore—560 012, INDIA**, so as to reach him on or before 31 July, 1986. The candidates should request at least three referees to send their reports directly to the above mentioned addressee.

R(IA) 308-13/86

Dated : 16th June, 1986.

**REGISTRAR**

# THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA

Notification No. ADE/4

Applications are invited for the following posts of Irrigation Management and Training Institute, Faculty of Technology and Engineering in prescribed application forms which can be obtained from the University Office on or before 28-7-1986 by sending a request to the Registrar, M.S. University of Baroda, Baroda-2, along with a self addressed envelope of size 30 cms x 12 cms, accompanied by a Crossed Indian Postal Order of Rs. 2/- (Re. 0.50 paise for members of Scheduled Castes and Scheduled Tribes) or by producing receipt obtained on payment in cash from the Accounts Section of University Office for the same during working days only between 11.30 a.m. and 2.00 p.m. No amount will be accepted either by M.O. or by draft or by cheque.

CANDIDATES SELECTED WILL HAVE AN OPPORTUNITY TO GO ABROAD FOR ADVANCED TRAINING FOR WHICH THEY WILL BE REQUIRED TO SERVE THE UNIVERSITY AS PER RULES.

## 1. Professor : TWO POSTS.

(i) ONE in CIVIL ENGINEERING with specialization in Irrigation Engineering/Water Resources Engineering/Hydraulic Engineering with field experience in Irrigation Design and Practice; and

(ii) ONE in AGRICULTURE ENGINEERING with specialization in FARM Irrigation Engineering with field experience in Irrigated Agriculture.

SCALE OF PAY : Rs. 1500-50-1800-100-2000-125/2-2500. Total emoluments will be approximately Rs. 3245/- at the minimum of pay of Rs. 1500/- p.m.

## 2. Reader : ONE POST.

Agonomy with specialization in Agromony of Irrigated Crops. Knowledge of Irrigated soil and Economics of Irrigated Agriculture is essential.

SCALE OF PAY : Rs. 1200-50-1300-60-1600-Assessment-60-1900.

Total emoluments will be approximately Rs. 2900/- p.m. at a minimum of pay of Rs. 1200/- p.m.

3. TWO POSTS of Lecturers in Civil Engineering with Specialization in Irrigation Engineering/Water Resource Engineering/Hydraulic Engineering and with field experience in Irrigation Design and/or practice.

SCALE OF PAY : Rs. 700-40-1100-50-1300-Assessment-50-1600.

Total emoluments will approximately Rs. 1946/- p.m. at the minimum of pay of Rs. 700/- p.m.

The application forms duly completed in all respects along with prescribed fees in the form of I.P.O. as detailed below should reach the Registrar, M.S. University of Baroda, Vadodara-390 002 on or before 9-8-1986.

(1) Rs. 10.00 (Rs. 2.50 for SC/ST applicants) for posts of Professors/Readers.

(2) Rs. 8.00 (Rs. 2.00 for SC/ST applicants) for posts of Lecturers.

Prescribed fee also can be paid in CASH,

against receipt to the Accounts Section of the University Office on or before the said date.

Note :

1. The candidate must possess the required qualifications at the time of last date fixed for receipt of applications by the University.
2. Canvassing direct or indirect will be a disqualification.
3. No application will be considered which is received after the last date of receipt of applications.
4. Application on plain paper will not be considered and no correspondence in that respect will be entertained.
5. Candidates if called for interview will have to come at their own expense.

R.V. Kothari  
REGISTRAR

## UNIVERSITY OF POONA GANESHKHIND, PUNE-411 007.

Advertisement No. 38 of 1986

Dated July 2, 1986.

## REQUIRES

### PROFESSORS (10)

Chemistry	:	1	Physical Chemistry
		*1	Inorganic Chemistry
Botany	:	*1	Experimental Botany
		+1	Mycology/Ecology/Plant Cell Developmental Biology
Mathematics	:	1	Analysis/Algebra
Biotechnology	:	*1	Biochemical Engineering
Hindi	:	*1	Hindi Language with a strong base in Applied Linguistics
Sanskrit (CASS)	:	*1	
Sociology	:	*1	Sociology of Development
Law	:	1	(Temporary post).

Grade : 1500-2500

Age limit : 50 years.

Minimum Qualifications : Eminent scholar with published work of high quality in the subject. Actively engaged in research. About ten years' teaching and/or research experience. Experience of guiding research at doctoral level.

OR

Outstanding scholar with established reputation having made significant contribution to knowledge.

### READERS (27)

Chemistry	:	1	Physical Chemistry (Temporary post)
		*1	Theoretical Chemistry
		*1	Organic Chemistry



Physics	: *1	1 (Temporary post)
Geography	: *1	Climatology
Mathematics	: 2	Analysis/Algebra
	: *1	Algebra/Analysis/Topology/Applied Mathematics
	: £1	
Biotechnology	: X *1	Cell Engineering
Zoology	: **1	Experimental Insect Behaviour/Insect Electro-Physiology
	: 1	Molecular Genetics (Genetics background)
Electronics	: 2	Microprocessor applications and/or Semiconductor Physics
Computer Science	: *1	1 (Temporary post)
Botany	: +1	Cryptogamic Botany/Plant Tissue Culture/Genetics and Plant Breeding
Geology	: **1	Sedimentology or Ground Water Geology or Remote Sensing or Palaeontology or Geomorphology or Economic Geology
Sanskrit (CASS)	: 1	Veda and/or Sruta Mimamsa
German	: *1	
English	: *1	Commonwealth Literature
	: 1	Language
History	: *1	Maratha History
Sociology	: *1	Sociology of Formal Organisations/Industrial Sociology/Sociology of Deviance/Sociology of Religion
Defence Studies	: 1	
Law	: *1	Research Methods/Commercial Laws

Grade : 1200-1900.

Age limit : 45 years.

**Minimum Qualifications :** Good academic record with doctoral degree or equivalent published work. Actively engaged in research or innovation in teaching methods or production of teaching materials. About five years' teaching and/or research experience with minimum three years as Lecturer or equivalent position.

**LECTURERS (19)**

Chemistry	: 1	Physical Chemistry
Zoology	: 1	Molecular Biology (Biochemistry background)
	: *1	Electrophysiology/Biochemical Evaluation
Geology	: 1	Geochemistry, Exploration Geophysics, Petroleum Geology
	: *1	Stratigraphy, Palaeontology Micropalaeontology (Temporary post)
Microbiology	: **1	Microbial Genetics/Industrial Microbiology/Environmental Microbiology (Temporary post)
Statistics	: *1	Applied Statistics or Statistical Inference or Operations Research (Temporary post)
Computer Science	: 1	
Electronics	: 2	Electromagnetic Fields and Modern Communication Systems and Electronics
Marathi	: *1	Dialect Studies
Sanskrit	: *1	Vedanta
Hindi	: 1	
Anthropology	: *1	Growth, Development and Constitution
Philosophy	: *1	Philosophy of Science
Psychology	: **1	
Communication and Journalism	: *1	Translation
Politics and Public Administration	: *1	Public Administration
French	: *1	

Grade : 700-1600.

Age limit : 35 years.

**Minimum Qualifications excepting for Lecturer in Journalism:**

- (a) Doctor's Degree or equally high standard research work. **AND**  
 (b) Good academic record with at least Second Class (C in the seven point scale) Master's Degree in the subject.  
 For developing Interdisciplinary Programmes, degrees in (a) and (b) above in relevant subjects.

**Minimum Qualifications for Lecturer in Journalism:**

**Essential Qualifications :** Good academic record with at least Second Class Master's degree in the subject (Communication/Mass Communication/Journalism, etc.) **OR**  
 At least Second Class (C in the seven point scale) Master's degree in Social Sciences/Sciences/Humanities with at least a Second Class Bachelor's degree or Diploma in Journalism.

**Desirable Qualifications :** (i) Teaching experience at College or University level.

(ii) Work experience in any area of Mass Communication (Newspaper/Magazine, News Agency, Public Relations Advertising, Radio or T.V. Journalism, etc.)

Candidates who wish to be considered for more than one post must make separate application for each of the posts.

+ The candidates who have applied for the posts of Professor and Reader in Botany in response to the Advertisement No. 45 dated 23-12-1985 need not apply again.

X The candidates who have applied for the posts of Professor of Biochemical Engineering and Reader in Cell Engineering in response to the Advertisement No. 42 dated 22-8-1985 need not apply again.

£ The candidates who have applied for the post of Reader in Mathematics in response to the Advertisement Nos. 1 dated 14-1-1984 and No. 45 dated 23-12-1985 need not apply again.

The posts marked with (\*) are reserved for candidates belonging to S.C./S.T./N.T. and V.J. However, if such a candidate is not found available/suitable, for a particular post, the suitable candidate from open category may be appointed if necessary on purely temporary basis, for a maximum period upto the end of current academic year. The posts marked with (\*\*) are reserved only for the candidates belonging to S.C./S.T./N.T. and V.J.

Application forms and more details of qualifications, experience, etc. for the above posts are available in person for Rs. 10/- in cash or by sending self-addressed envelope (23 cms x 29 cms) stamped for Rs. 3.00 and Postal Order of Rs. 10/- to the Registrar separately for each post.

Apply on or before 9th August, 1986.

V.G. Jagdale  
REGISTRAR